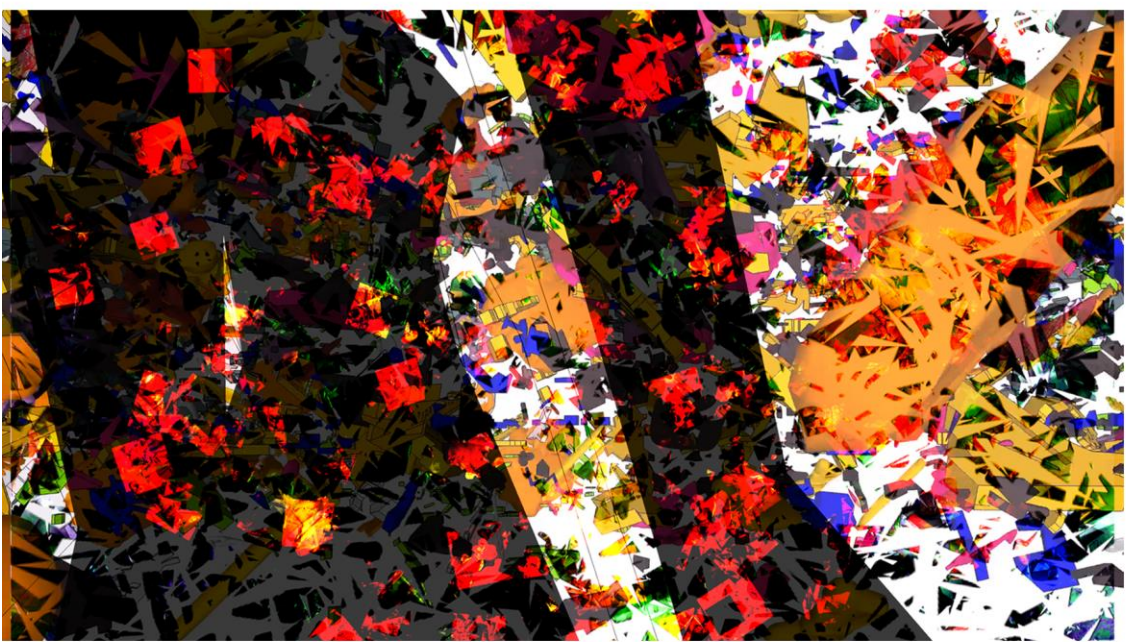


THE PROGRESSION  
OF UNCOVERING



HYPERDYNAMIC  
ENVIRONMENTS

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# INTRODUCTION

Over the course of this study, there have been many resources that were used in the development Hyperdynamic environments. Hyperdynamic is not related to architecture in anyway because hyperdynamic relates to the body. “Hyperdynamic is marked by abnormally increased muscular activity, “Hyperdynamic Medical Definition”. However, this definition is not used but the understand of what it is used.

This hyperdynamic environment came from three sections at are interrelated to each other and the four section is hyperdynamic. The idea of environments existing in ideas or tools is unheard of, however if you study the word of virtuality then it makes more sense for them to exist.

Not only can we use virtuality, but we can also use eidetics along with looping to understand the environments. By exploring Hyperdynamic it become a process that is more actively changing and evolving. We design architecture in environments that are static and dynamic, “Static is fixed in one place, or lack of movement, Static Definition” and “Dynamic is marked by usually continuous and productive activity or change, Dynamic Definition.” but what would happen if we begin to design with the idea of hyperdynamic environments.

By creating eidetic images, eidetic looping images, and looping networks as tools, I was able to uncover that there is a lot more to this world than we believe. These environments are what architects like to focus on, such as framed views, building materials, and even the structure of a building. We focus on what

is familiar to us because we don't challenge things that we are unfamiliar with. I took that plunge into the unknown and challenged the familiar by breaking down the structure of the familiarity into pieces to make them unfamiliar from the original.

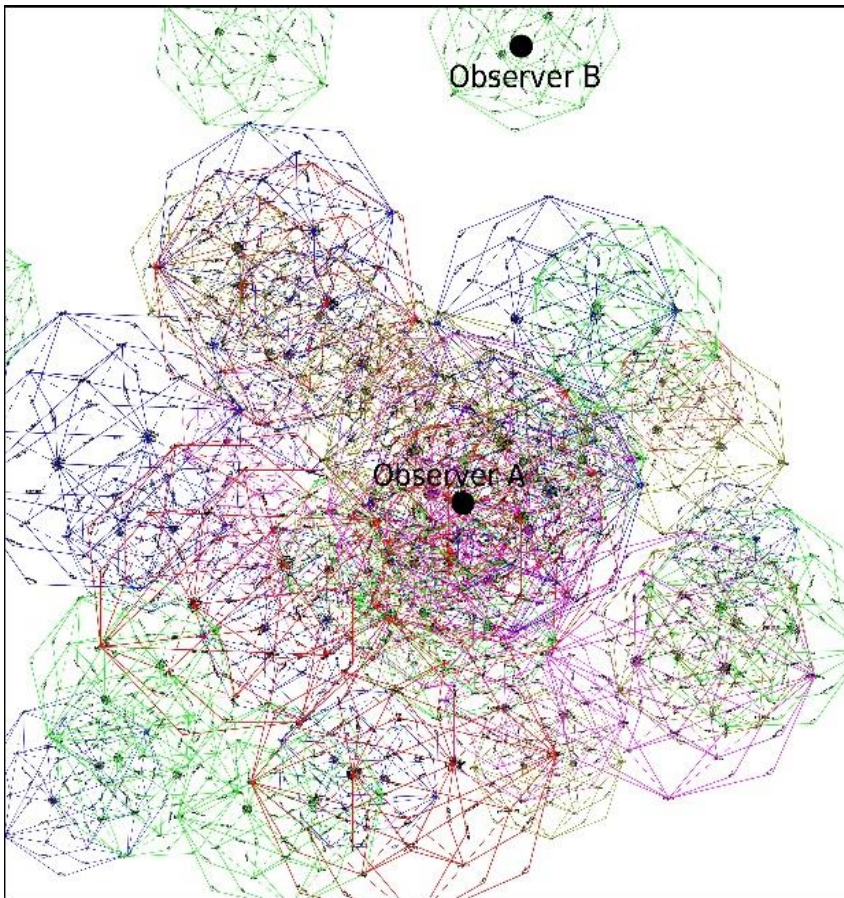
This process was challenging to say the least, because everything we know, is familiar to us. Before I go further, there are key elements that were involved in the process of discovering Hyperdynamic environments. There were a number of elements that were analyzed to uncover what is unfamiliar to us. These elements are divided into 3 sections that play off each other as one idea leads to another and then loops back to that idea again. You are allowed to, in a way, "Choose Your Own Adventure, Gregory Laidlaw" in how you read each section.





# HYPERDYNAMIC

This is a representation of how a network would look like if you stand back from a distance. Observer A is a female and Observer B is male. Observer A is inside her network and she views her network and static and dynamic. Observer B is inside his isolated network and views his network as static and dynamic. Observer A can see Observer B's network but cannot access it because it is moving around too much to find its exact location because Observer B's network is a Hyperdynamic network.

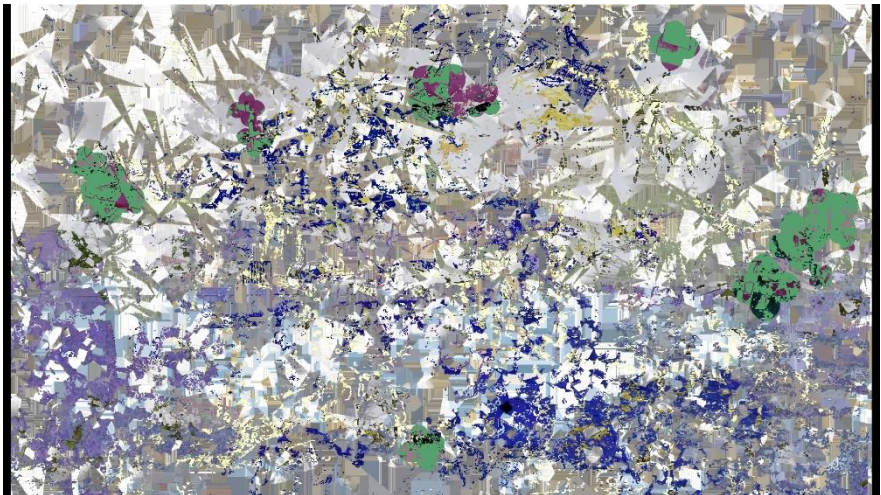


What does knowing about the outside of the frame do? The frame is referring to what observer A views outside her world. Well by

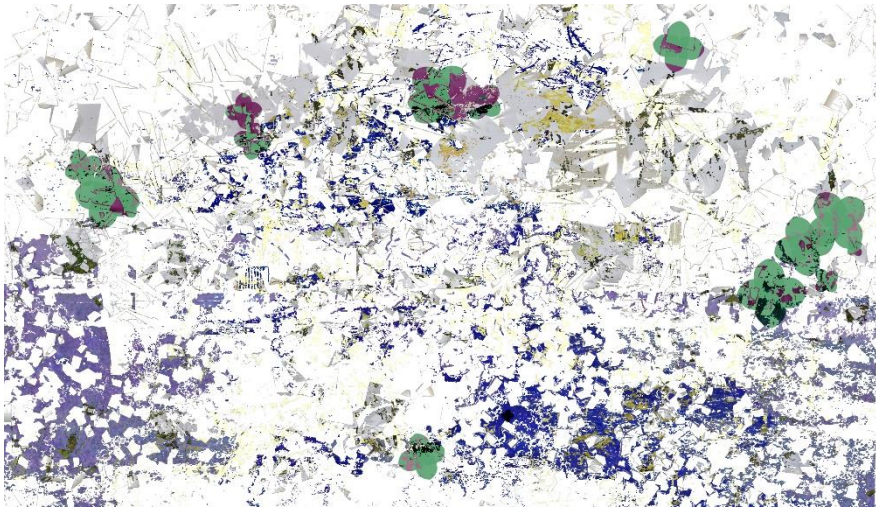
knowing what is on the outside, we know that things exist outside our knowledge according to the possibilities that become more visible when standing outside the frame; because the Observer can know which direction will produce a better result.

While I was walking around I was trying to understand frames and what's outside the frame This led to the creation of an eidetic that was slightly forced but I wondered what would happen if these two images come together. I discovered that when they do the boundaries between the objects and frame become lost. It then becomes more about how to approach them as a network of information.

While I was reviewing all 63 previously made eidetic tools, I wanted to view all the images that were in different folders all at once so I took them into Windows Media Player because I was using VLC to listen to music. When I came across on interesting image that I have never seen before.



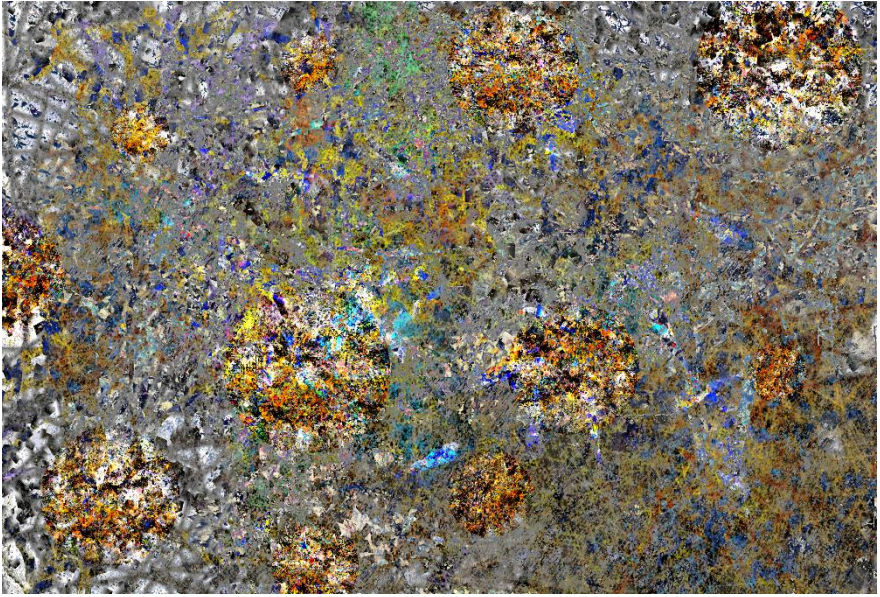
This image what the original image is supposed to look like.



At this point, it hit me that I may have discovered what was is outside the frame of the network. After trying different images and getting the same results, I now know what is happening to the images. What is happening to the images is that the computer or more technically speaking the video player is trying to fill in the transparency with some data, it doesn't have and interpolates the data the best it can.

What would the network look like looking outward from the inside of the network and what would it look like looking at the network from the outside?





This is the solution to what it would look like from the inside looking out. You can barely make out shapes that could resemble something but you are not sure. This is a representation of what it would look like if you are outside of the network looking at it.

These questions will help to answer the other question of what would the network look like if it is broken?



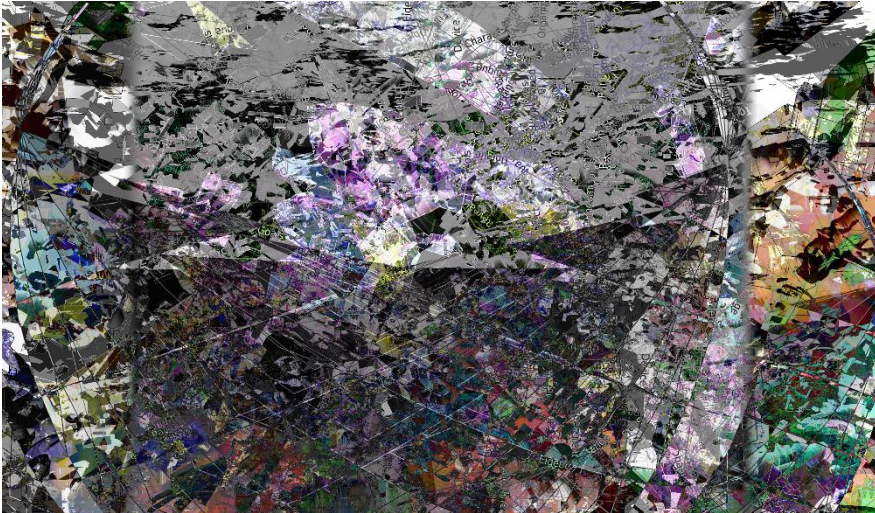
For a network to be broken makes the so-called network, not a network anymore. However, if I am standing on the outside, I see the intact network it is either a cube or a sphere with objects inside. I do not know what the objects are because they are either small objects and therefore are hard to recognize them or they are objects that we have no association with and therefore cannot identify them. However, we recognize the patterns of colors the objects produce.

When we view the network from within, we don't see the edge of the network but we see a network that looks infinite.

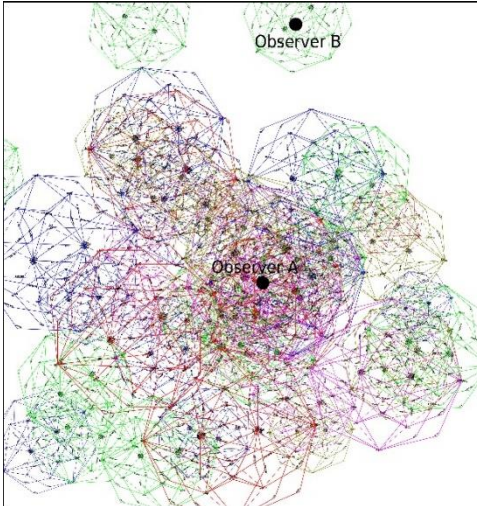


The infinite network is the network looping back on itself to always have a complete network. In essences, the network might know that there is more out there than itself but it has no way of communicating with it. So,

there could be networks within networks that are so jumbled up that it is hard to pick them out.



A network must communicate by means of sending and receiving data to devices. When you have some type of interference on the network, it will cause problems that data maybe partial or incomplete making the data of information unreliable. Having a network that contains incomplete data is useless for anyone who attempts to use the network.



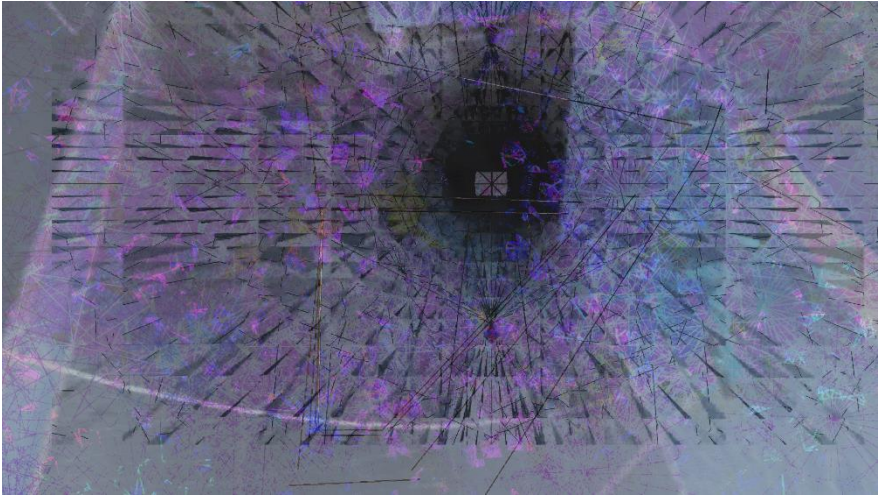
The user might have to try and guess what information is missing. Having two people view their own networks, each of them has data that was contained within their networks. The data shows some fragmented data that is strange to Observed A and Observed B. This fragmented data cannot be accessed because the

network has no way of getting that data. Observer B leaves the fragmented data alone and the other tries to figure it out. Observer A starts to think of the many possibilities that she can access the information.

*These attempts are stills from the videos which will be available at the end of the book before the log page.*

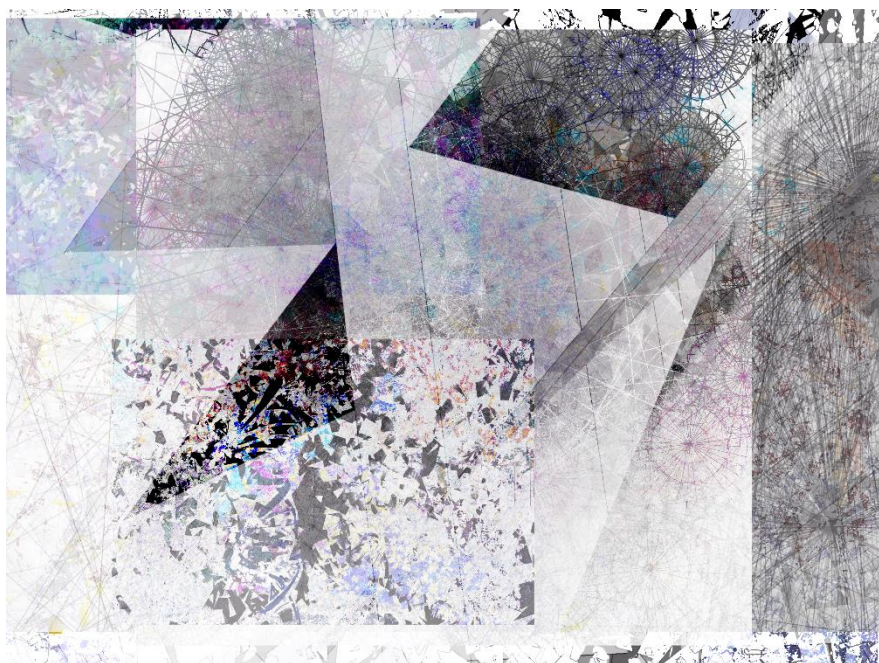


Attempt 1





## Attempt 2



### Attempt 3



Each attempt at getting this information, begins to reveal more data that we cannot decipher.

Attempt 4



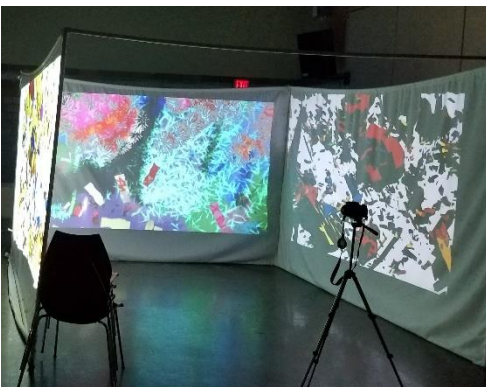
On the 5<sup>th</sup> attempt something happens.



## Attempt 5



Attempts 1 – 4 are tools to discover the fifth attempt  
Observer A begins to look at Eidetic. With the help of eidetics, they were able to explore the notion of hidden meaning or possibilities that an Eidetic contains. Eidetic is a tool that is used to uncover hidden possibilities within other objects or tools. This revealed to Observer A that Observer B's network is Hyperdynamic by noticing little signals the network was producing. These signals are indications of changing environments that are so hyper they are not visible to those who or not looking for them.



An environment was setup to reproduce what Observer A saw. This is an overview of the environment where this is the environment.

With these tools, you are able to start taking a whole and break it down into structure pieces. The structure is used to create an



environment that allows the virtual to take over by opening the doors to limitless possibilities of what could happen.

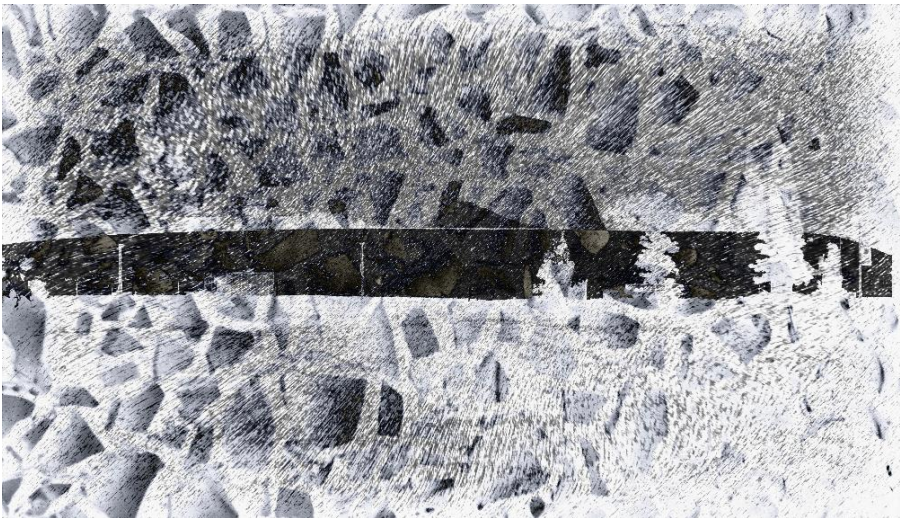
However, the pieces are not the original structure but something entirely different. As the progression of hyperdynamic environments are explored, they are a tool to reveal what we define a structure is.

# EIDETIC

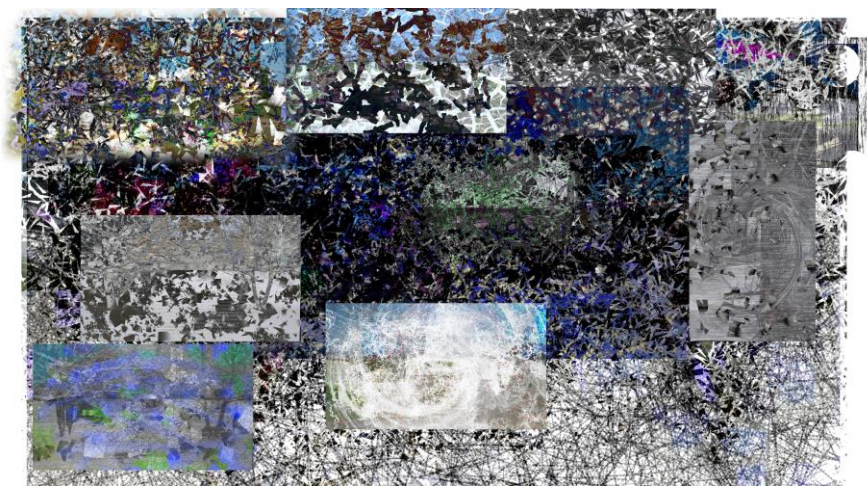
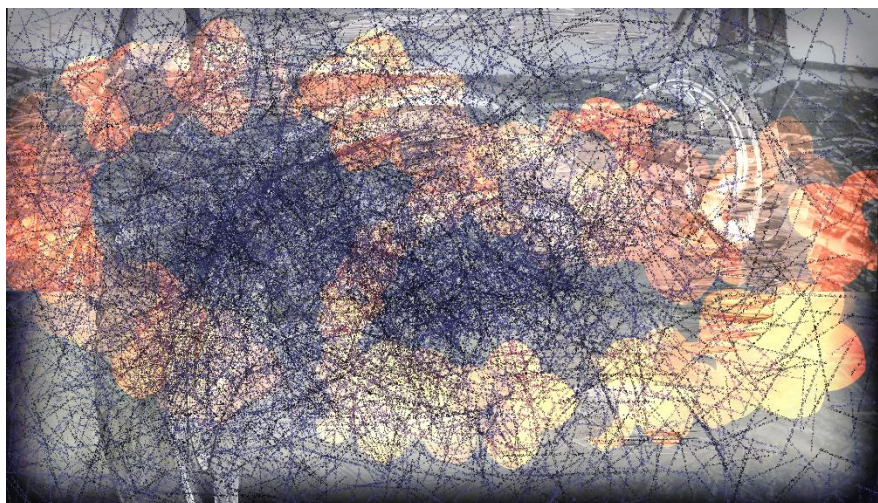
I studied eidetic was a way of understanding how we can use images as tools. These tools can be used with other tools to break down the structure of a tool. But the structure is not visible and must be uncovered by virtuality. These tools are part of a virtuality system that make connections to things that you would never think there could be a connection. Virtuality is a reality that is not real but could be, “Tony Martinico”.

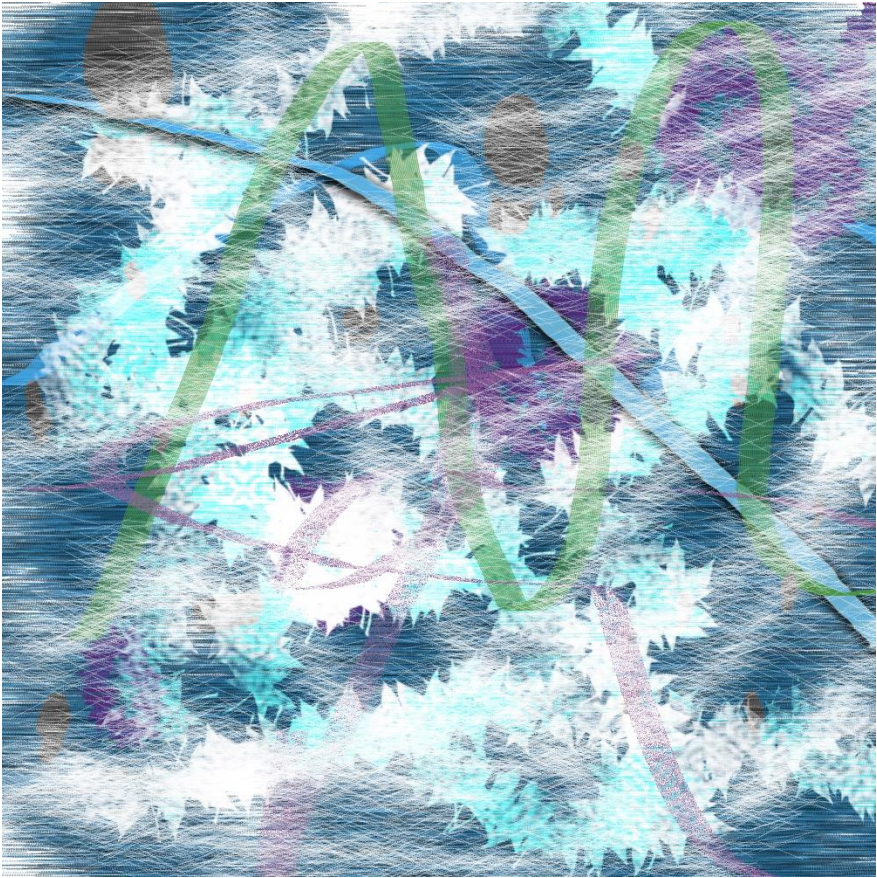
According to “Merriam-Webster”, Eidetic is a vivid memory or recollection. This memory can be faulty at times and cause the memory to shift and have a different outcome than you remember.

The following are a few eidetic images that I created, and examined as potential tools to explore Virtuality.

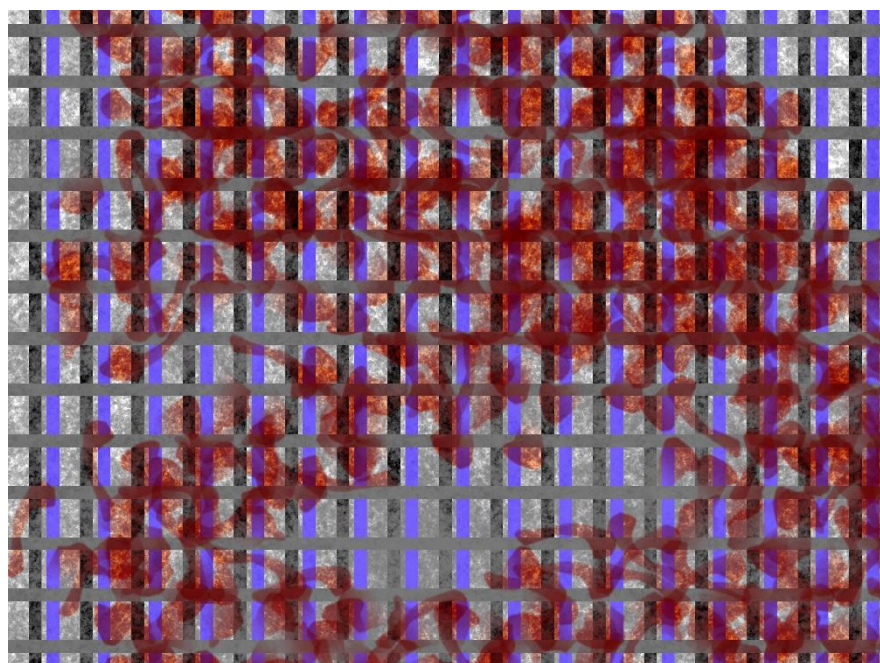




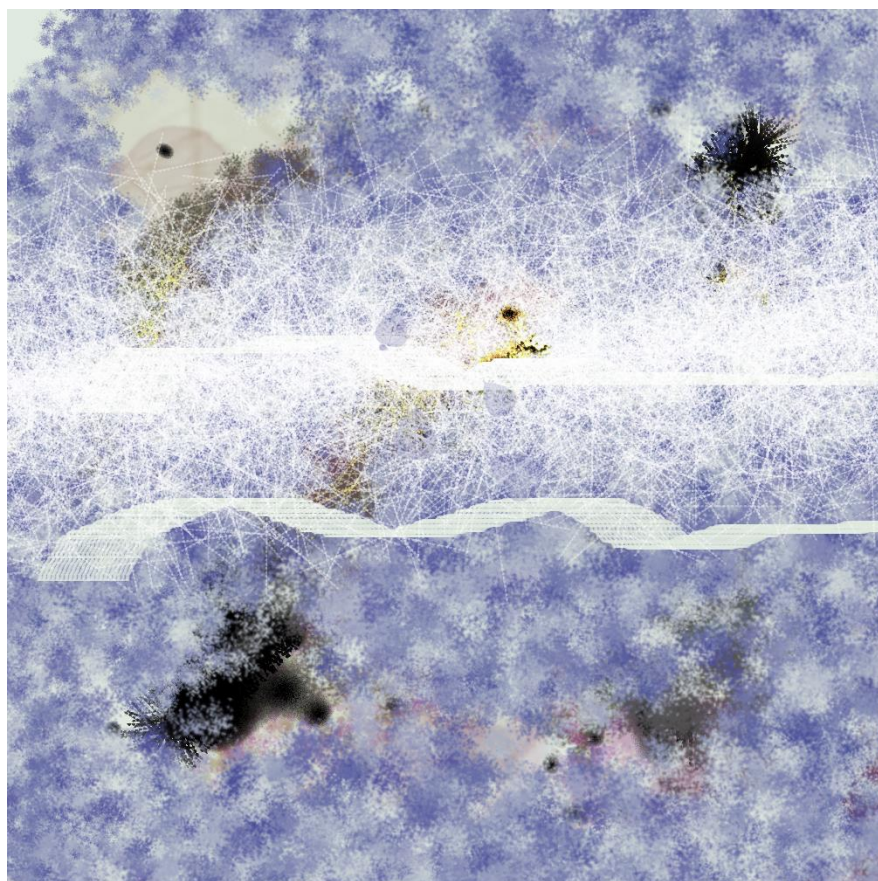




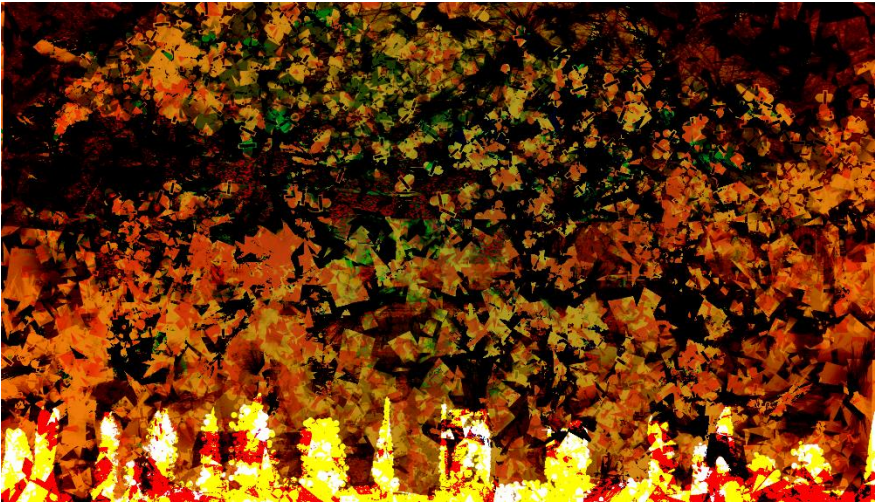




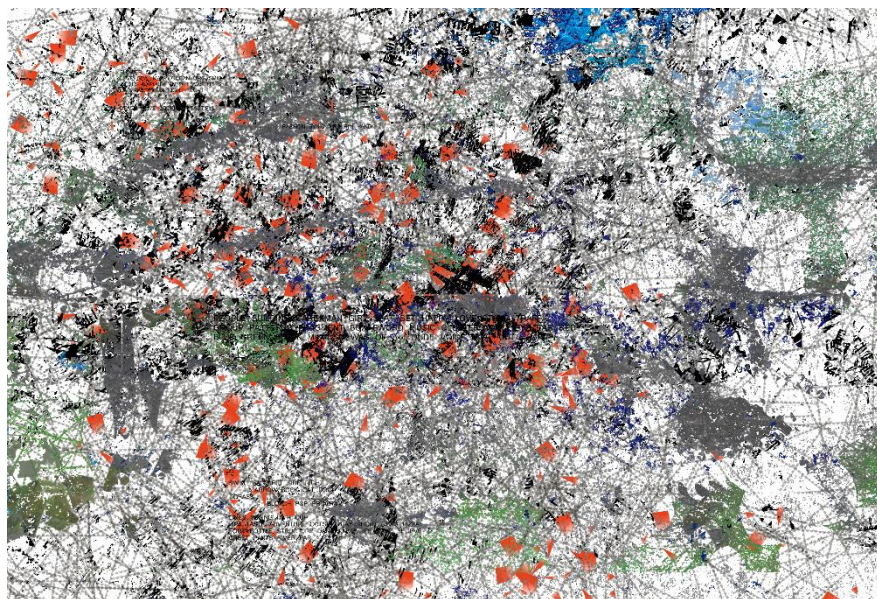
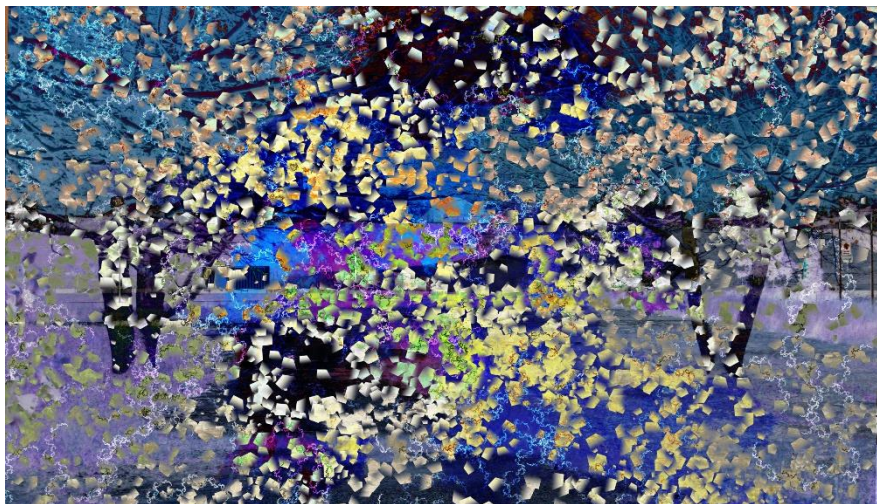








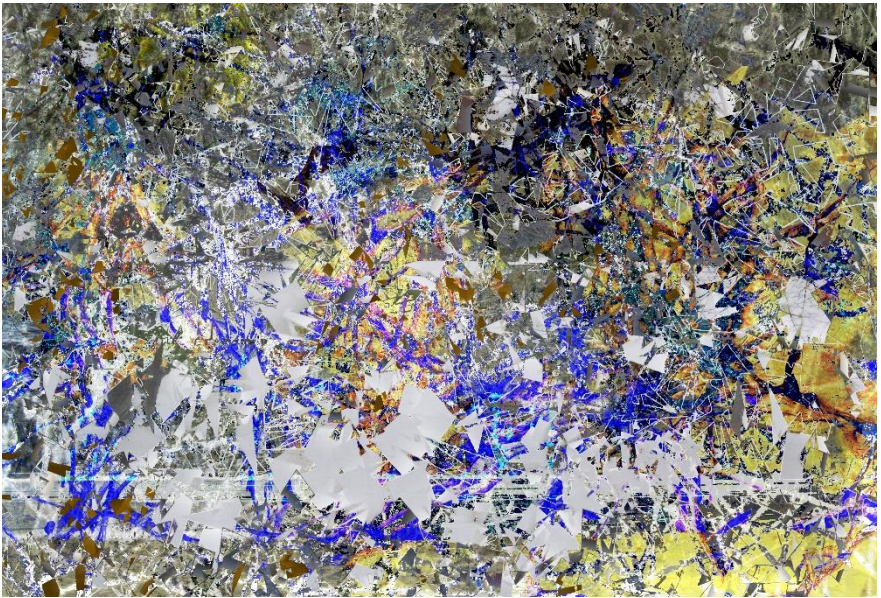
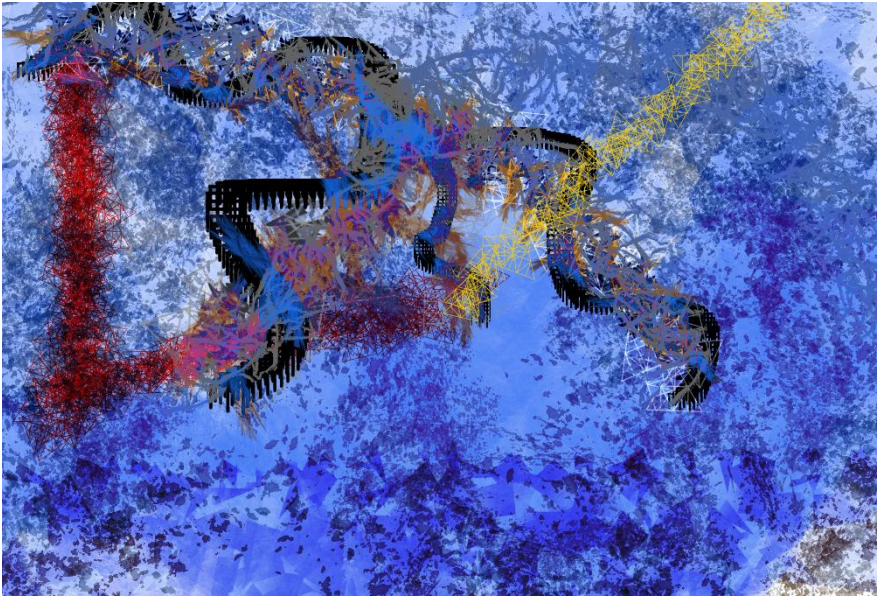




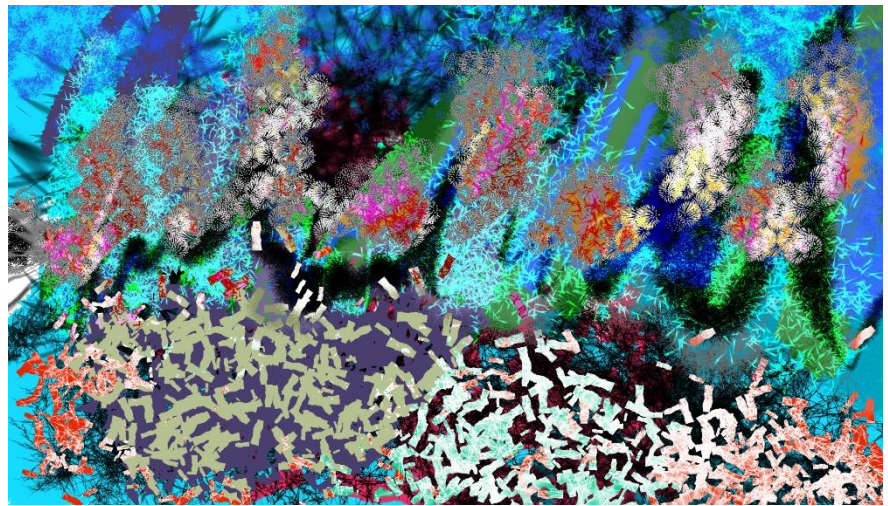
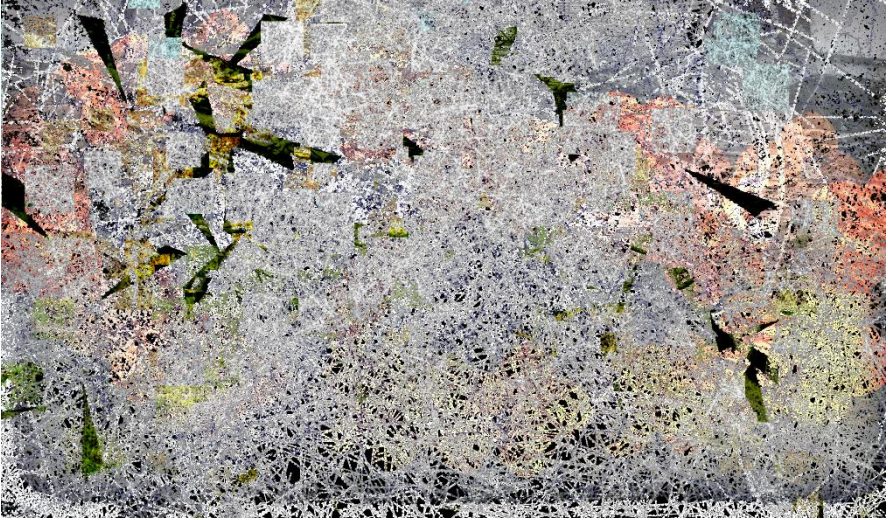




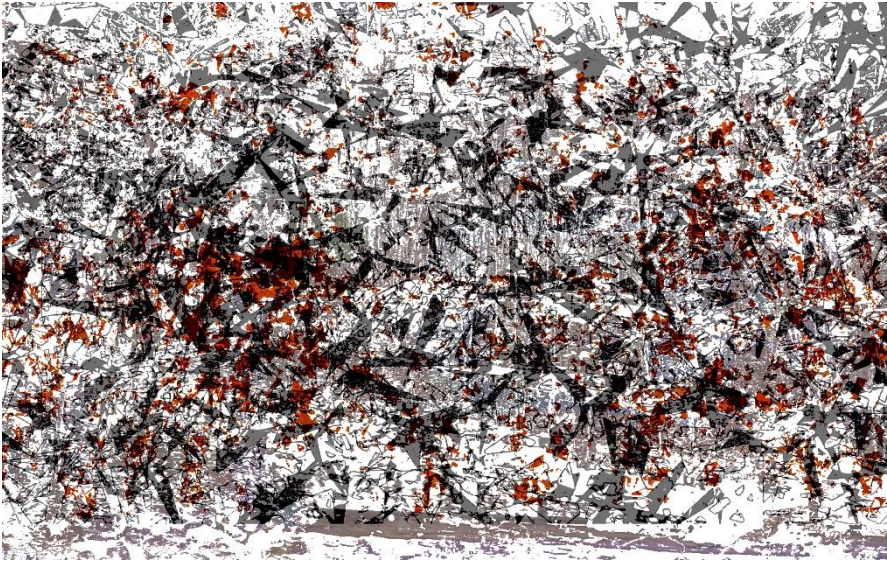




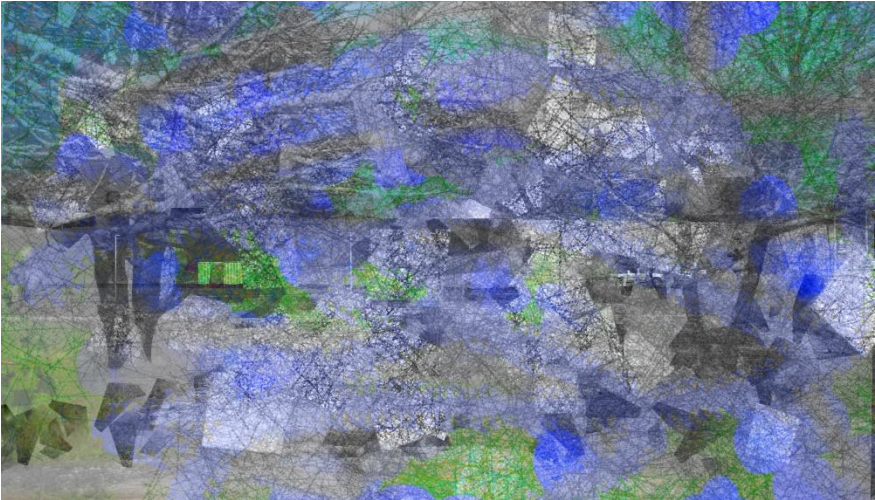
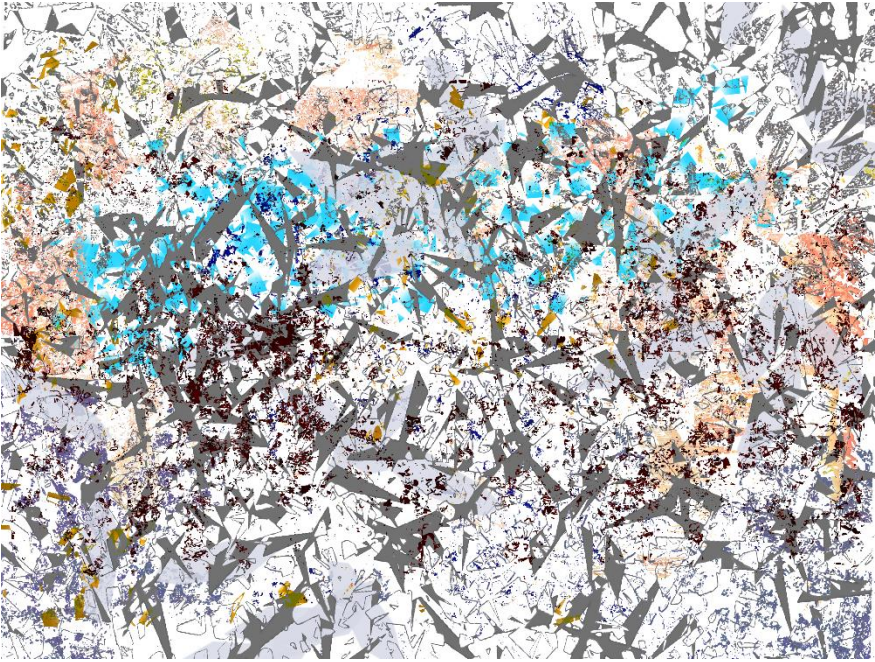














With the help of eidetic, I was able to explore the notion of hidden meaning or possibilities that an eidetic contains. A series of eidetics images were created that would help me to see something within the image and piece memories together to create possibilities. When the images were being created, there were no instructions in how to make them. With no instructions of how to create the images, I had a blast of creating them because I used my imagination to discover new and exciting ways to design. To discover something, you must uncover something hidden or think about it in a unique way. I am uncovering the process of making, by taking a framework or structure and breaking it down. The eidetic images that were created are stunning because of the shapes, colors, and patterns that were used.

Using new techniques to explore new ways of using tools to create. The eidetic images were created using three devices; a keyboard and mouse, a drawing tablet, and the PlayStation Move (PS Move).





The first two devices were easy to use but the PS Move was a different story because it difficult to find software drivers for it to work with the computer. “Using the PS Move as a pointing device is possible with ready-made software, in this case “Move for PC” by Osvaldo Rosado” In order to use the PS Move in Photoshop, however, I had to add some additional programming of my own. The devices had different mobility to them and it allowed me to experiment with different ranges of motion.



Eventually, I tried to take the program a step further by using the PS Move and another device called the Oculus Rift. The Oculus Rift is a head mounted display that is based of its great great grandfather the Stereoscope.



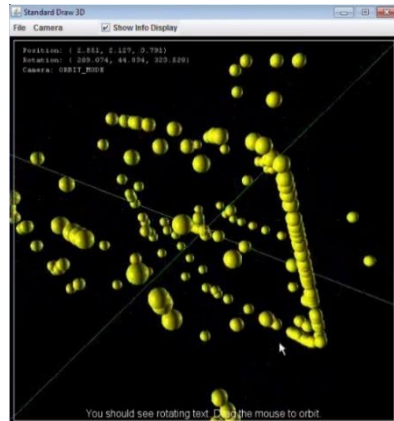
The Stereoscope is a binocular device that Sir Charles Wheatstone developed, where you look through and see a fixed image and each eye sees that same image, “Phil Condax” Seen here.

To make this program happen, I have to create a program using a programming language called Java that will allow both devices will communicate with each other. Java was used because I am very familiar with that language. While researching for help, a program called “StdDraw3D.java” by Princeton University was found.



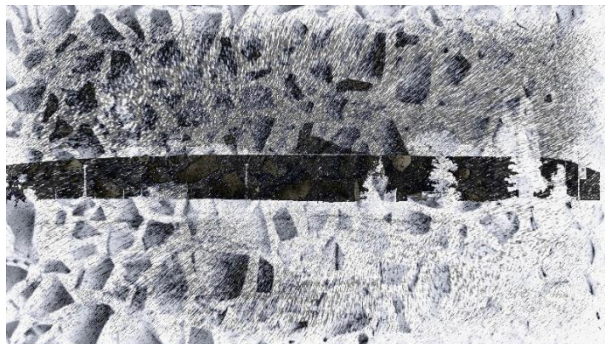
However, the program did not meet my specifications but what did meet my specifications was that, I was able to rotate the camera around an object. I had to modify the java program to first create spheres at whatever distance. This proved to be a challenge because one sphere could be created and not multiples ones. As seen below. After the amount of time it took researching in the PS Move, which I am not familiar with, had to be placed off to the side. (See the programming logs page for the documentation of the programming progress.)

Instead of using the PS Move I used the PS3 Controller because I could easily connect it to the computer. I eventually was able to place spheres using the PS3 Controller.



In the process of the creating the program, I produced more images to help my brain get in the mindset of using technology to understand spaces virtually and physically.

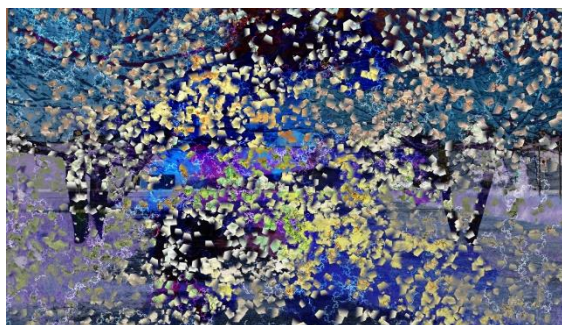
The techniques that were used allowed me to use technology to my advantage by exploring new ways of expressing myself without any limitations. This allowed me to think freely and not be restricted to boundaries and so at times I had to reinvent the wheel for me to see new possibilities. I have to understand the



internal working of things for me to understand how things work.

Each one of my eidetic images has fragments of the previous image coded inside of it.

This image was to show fragmenting pieces floating in space that are trying to reform a memory. Yet having a somewhat unclear memory but somewhat still intact and can easily remember it.



With this image, it is a completely different memory and was the start of two memories overlapping with many pieces jumbled together. However, this

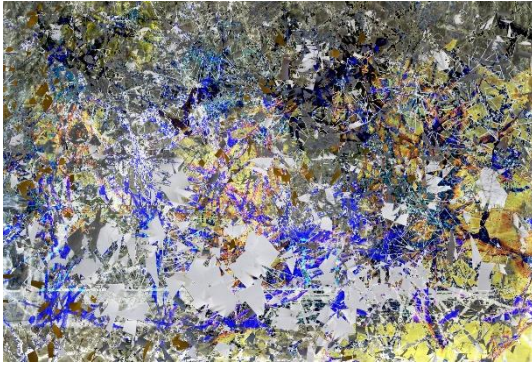
image is hard to remember what it could be because I keep thinking about a scene from the Anime Bleach, of a lot of flower petals floating in the sky.



These images can be used as tools to visual representation of how data is stored on a hard drive and how the drive goes in search for the data. It can also be used to show what corrupted data looks like

and how it becomes uncorrupted. They are all like packets of information but you need a cypher to access the data to make sense of it all. But the journey to get the data is the adventure.

When you begin a puzzle, you take pieces and start to organize them by color or size determines how quickly the puzzle turns into something fun verses something that is very tedious and annoying.



Some of the images or designs are similar and some are very different; some of them can bring back memories or create an illusion of something there.

For this image, it is kind of a negative and you are trying to piece the image back together. Or something that was painted but didn't finish drying and was hung up and the color started to run down the canvas. If you view the image on a computer or physical version you get the illusion that the floating pieces are in virtual space.

There is no color theme, or pattern theme that repeats in the images which is something that is unique. But there is something that all of them share and that is they have a self-expression of creation. This creation with tools/devices is something that can be taken a step further by examining how other individuals use the tools to create but in a way that the individual does not know you are studying them.

While I am writing this, I am messing with eidetic images again trying to figure something out. But an idea is coming to me where I



use pieces of real objects to create a new eidetic. An experiment was done with physical objects that would be placed at random intervals and heights. Another experiment was done at the same time with images of objects of things

I like to see if I get anything from it.

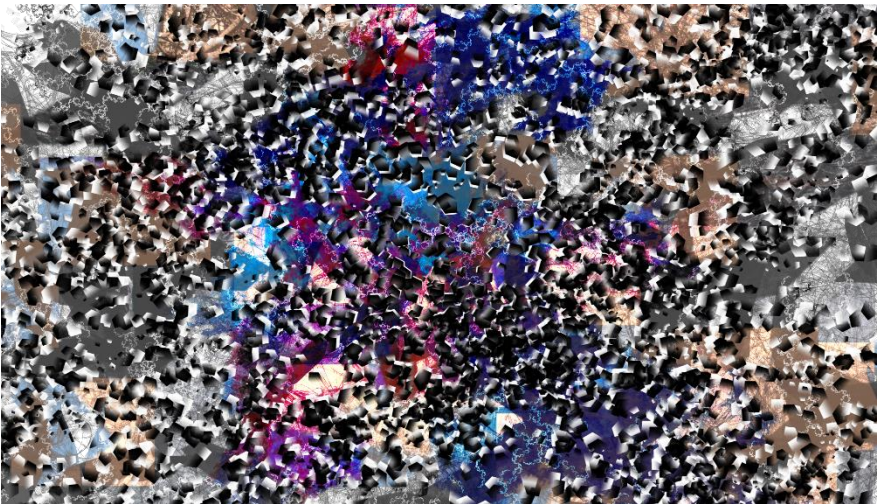
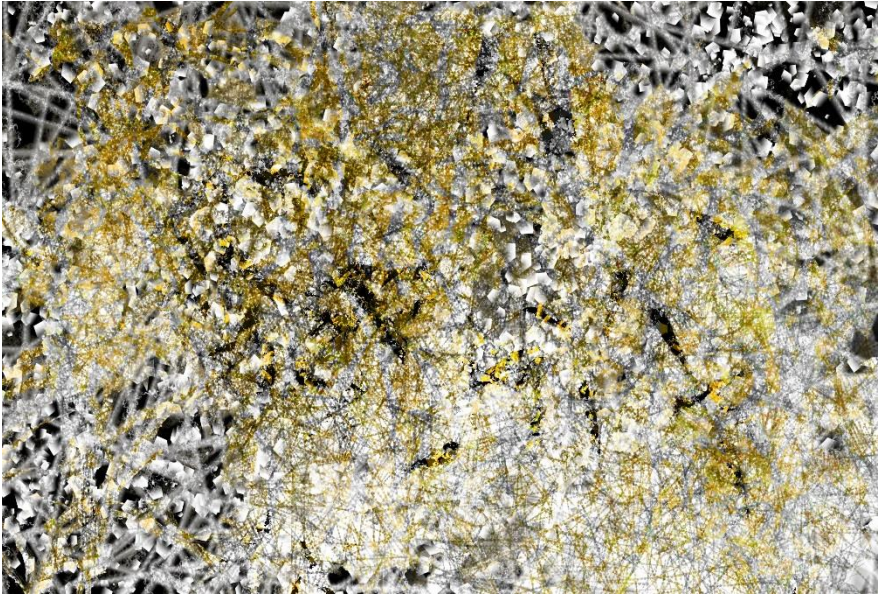
The physical experiment was difficult to create because the objects that were used had some type of association to things and defeated the purpose. The images of objects also difficult because I wanted something to come from this experiment. What was learned from the experiment was that things need to happen naturally, instead of trying to force something to happen.

After analyzing these eidetics, the next step I would do is see how it would be to create the pieces in virtual space or physical space to recreate the design physically to try to get the same experience. I cannot recreate an image due to the objects at my disposal and therefore, the experiment would not produce the same result.

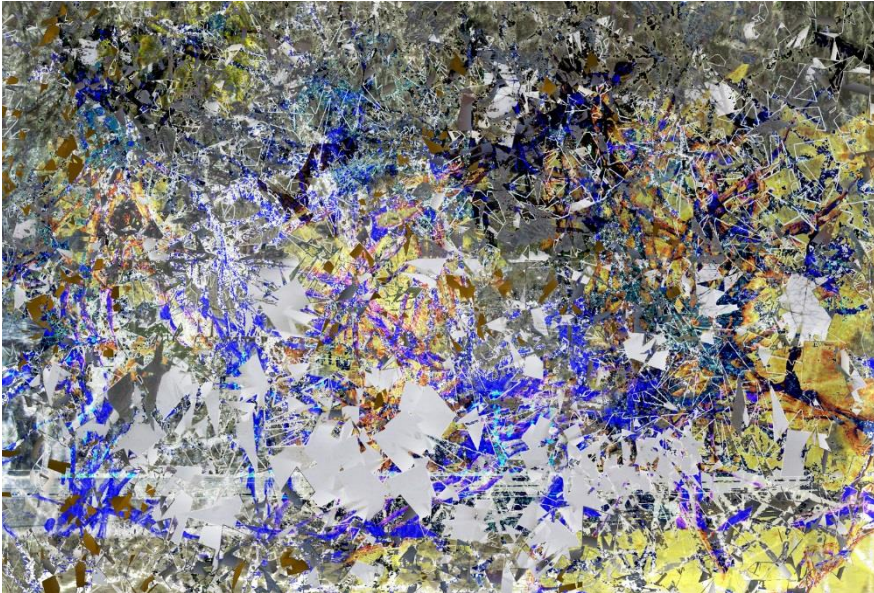
I wonder what would happen if you combine all the images into one and see if it creates an image or another tool or “What if, “Tony Martinico” the eidetic became an environment.



What would happen if the images became a tool to accomplish a task? As I continued to analyze, a few more eidetics were created after new possibilities were uncovered.



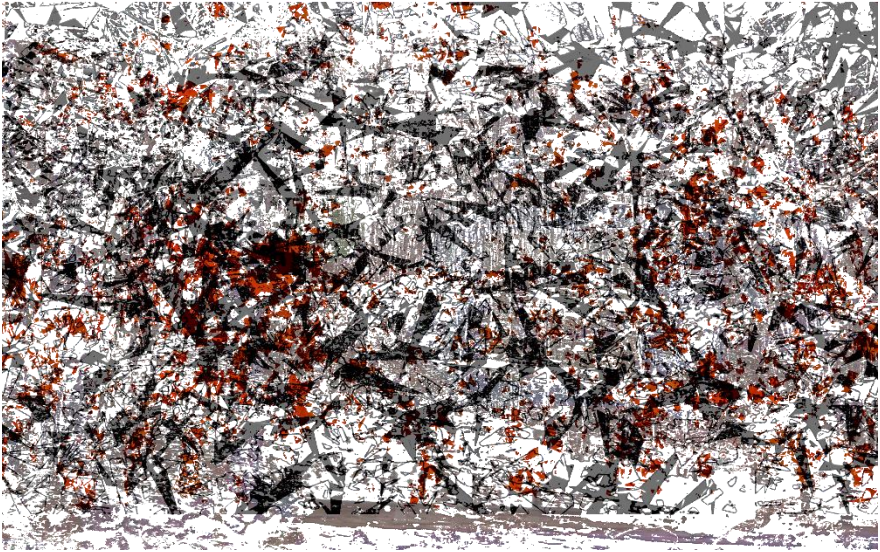
Instead of understanding these two, there was one image that was done previously that had some potential for discovery embedded in it.



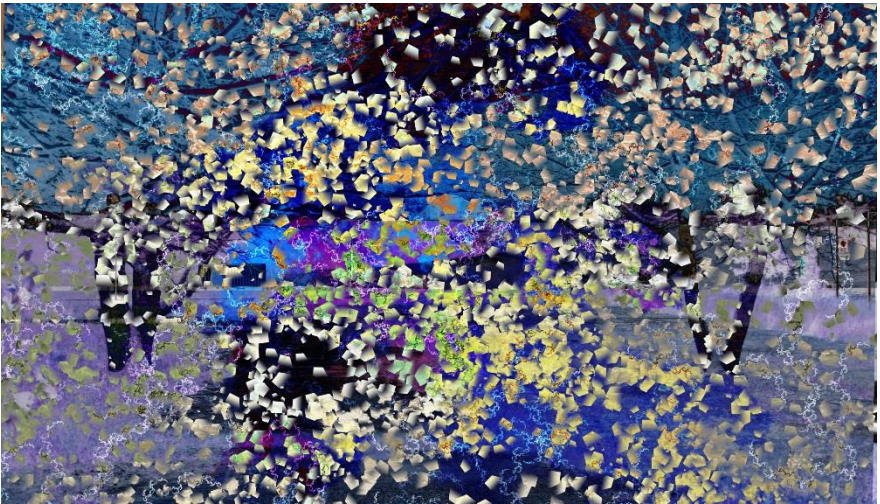
The dense colors represent a lot of activity in those areas. Not sure what kind of activity but this tool is an organization tool that could help us figure things out like vehicle movement patterns or tastes of where people group up. The colors could be a lot of population movement or population growth also. This snapshot that is taken as a Macro view where it is a very zoomed out view of things.

Another image related to the virtual.



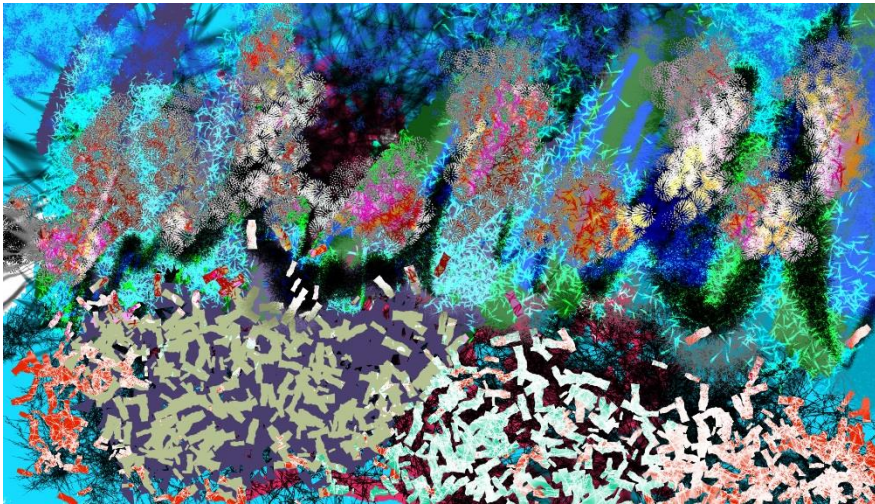


This eidetic I can see myself inside of this environment. Either sitting down or standing in a forest in winter with snow on the ground isolated from everything. How will I uncover this environment? Not sure, I am just going to have to experiment with things and figure out as I go.



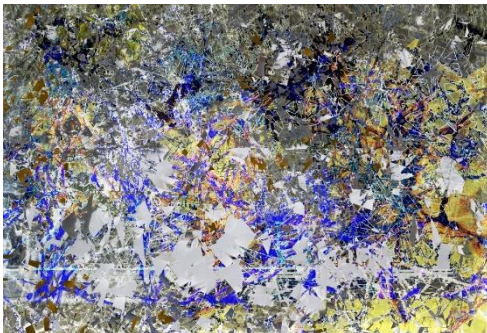
This can be used as an organizational tool, to start organizing the pieces to create some type of structure.

The top is pieces in a void space that at the bottom they are arranged into color of a specific taste. They can also be organized by light, food, hobbies or even sound.



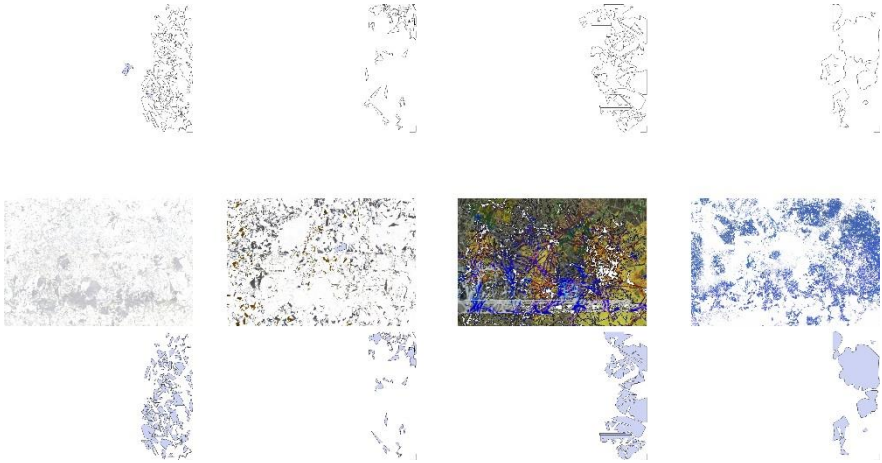
It can be a soundscape with a top view of a city. The sound is a mixture of different sounds that some stand out at time but mostly creates a harmonic sound. What comes to mind is fireworks on July 4<sup>th</sup> that represents all the different explosions that occur. This is the top layer along with a sound graph.

Now, just focusing on one image that is familiar to me now. I begin to understand what virtuality is, as I break down this tool into parts to see what pieces of information contain inside of it. I then

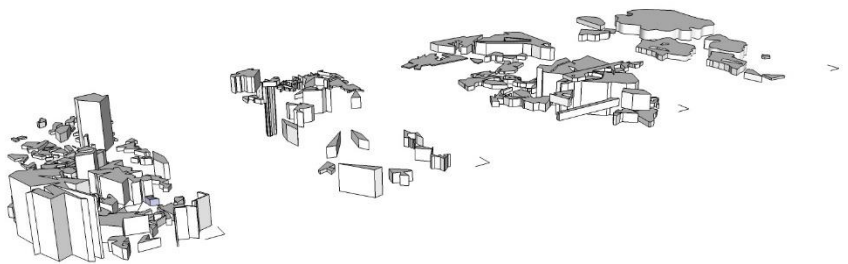


separated the tool into 4 sets of information that was only just a faction of the whole tool.





In order to understand something, you need to become familiar with the thing. By breaking this down, you are able organize the pieces of information into some type of pattern that are you familiar with. This can be done by either size or shape of the information. This will allow for a familiar object to be broken down into pieces and then brought back together to create something new.



The bottom of this image is pieces that were extracted from part of the image. The top is the beginning of extruding the pieces into 3D shapes. These shapes were then assembled into another form.

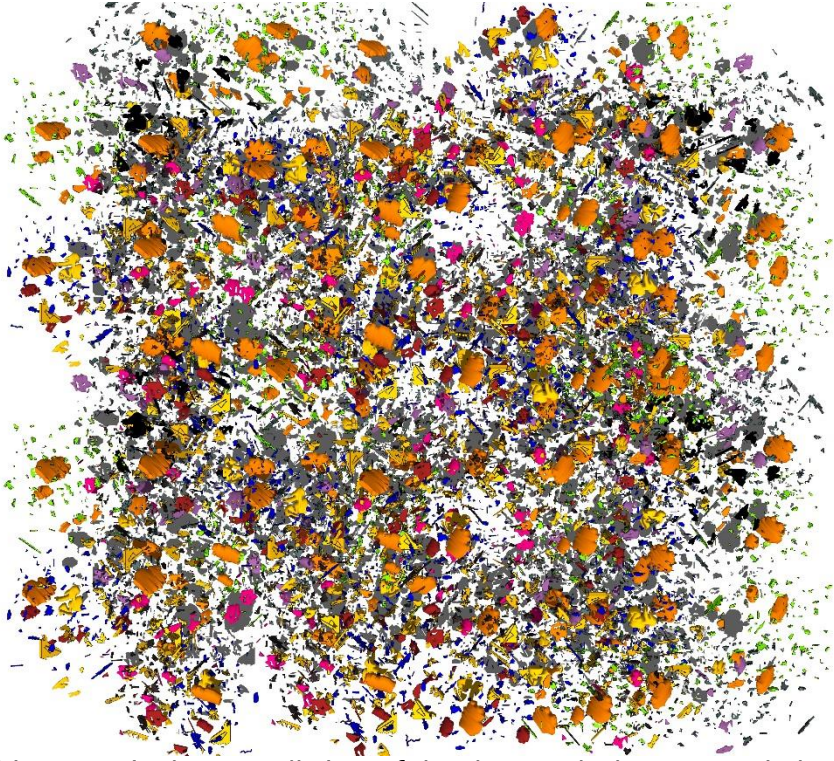


But this did not create any effect that would represent virtuality or cause me to think differently. So another step had to be done to maybe trigger something.



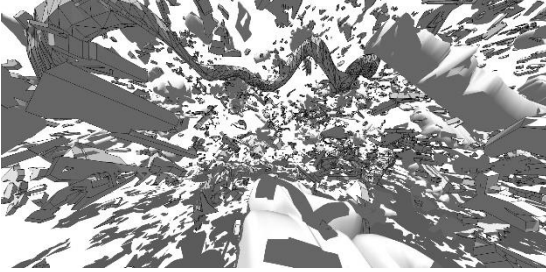
By taking the pieces and twisting them something in the image affected me emotionally. The emotional affect is difficult to put into words other than it was exciting to visually see and on top of that I could see fragments of data within the image.

Random colors were added to the pieces, to again see what kind of data occurs. Not sure what kind of data but this is only just a tool. By extending view of now what was familiar to me, I took the pieces and spread the out to add more depth to the pieces. By doing so, things started to come together about an idea of network data.



This scene is the overall view of the data and when you switch to the next scene you go more in depth of the data to determine what the actual data really is.





Adjusting FOV (Field of view), I see pieces beginning to form a structure, like a portion of concrete slabs. I adjusted the FOV again and found something

interesting. The pieces start to begin to move and change shape as if you are being pulled through space and the pieces start to transform or morph into something.

This image was going back pieces that were unfamiliar with shadows on.

I am able to see a start of a wall come into existence, if I remove the color. It is located in the center of the

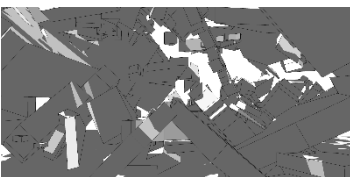
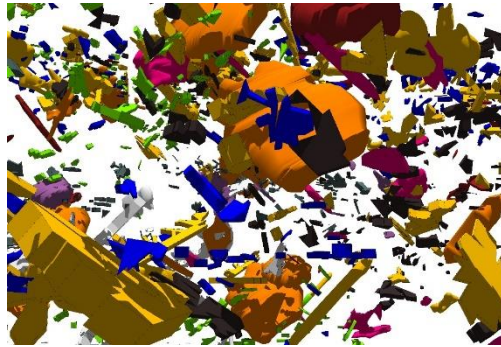


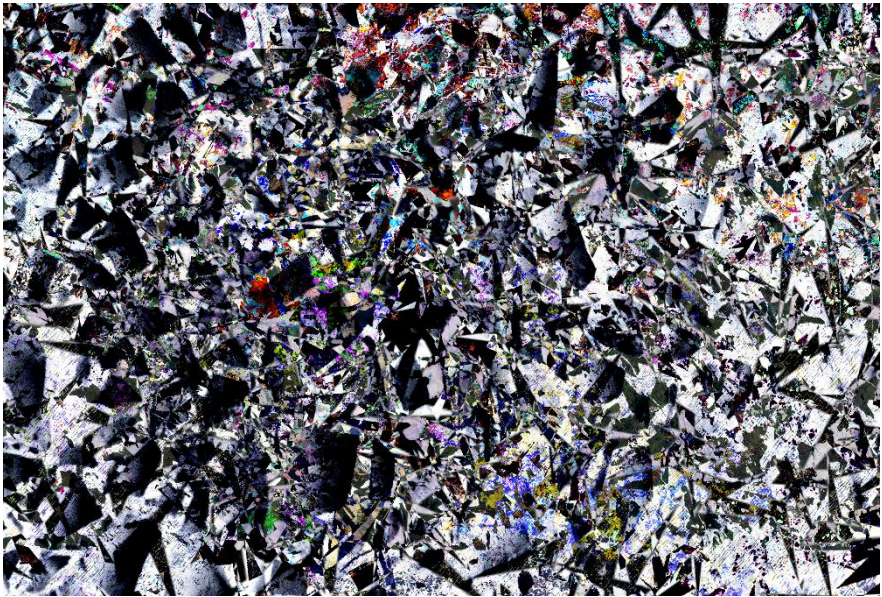
image. Could these pieces be a visual representation of a soundscape with each piece has a different sound. I do not know what sound but I will explore my options.

Anyway, I created a 3D tool with and without color to mess with the tool to uncover something. By applying scale to the objects allowed me to define them as a particular set of information; like the amount of use in a space by how big the object is from the viewer.

Along with exploring the colorless 3D tool, another tool was created to attempt to get a better sense of how the tools can be used as a environment.

I assumed that the tools of the environment are realities. I defined reality here as something that has the potential to be real. This is a blending of fragmented realities and a mixture other realities together; confusing them into which one is real. The goal of this is to figure out a solution from the images or tools but also to understand them for what they are.

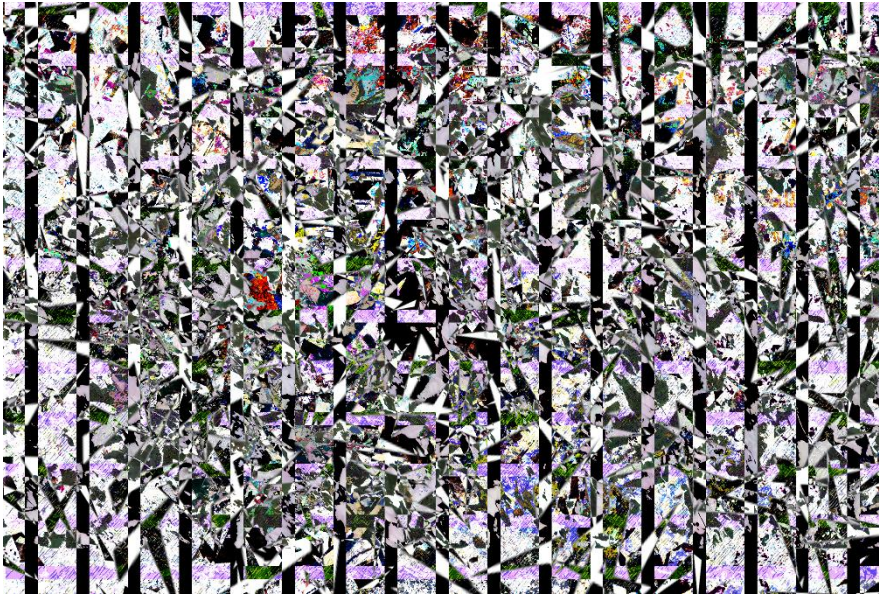
By taking a few of the tools and turning the 2D image or tool into a 3D image, I see the 3D as a database. To fully understand how a network of databases work, I need to find out how I can link them



together. We know a map contains information the boundaries and scale but the only way to read the map is by using the legend. The legend is familiar to us but if we take the legend away, we imagine the legend and imagine how to use the map.

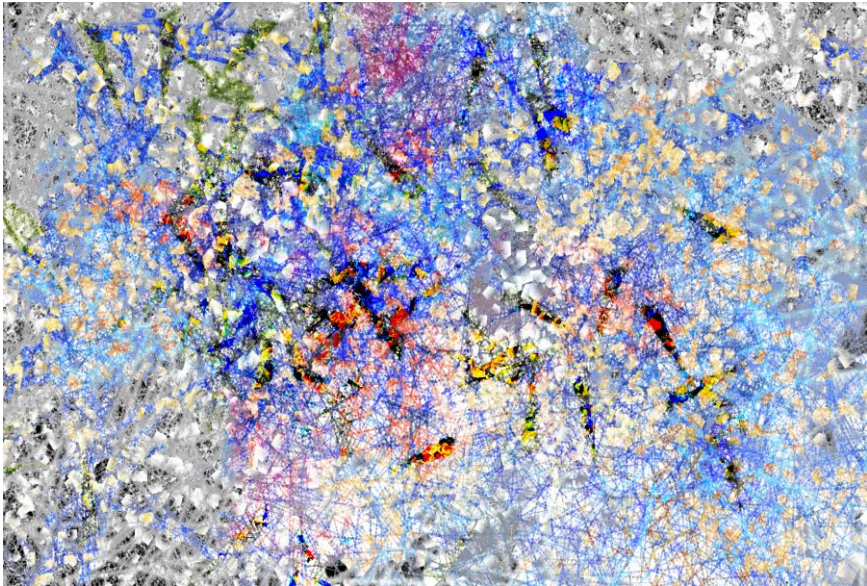


When we imagine something, we reconstruct it in space making it become a virtual creation; this recreation becomes a basis for a



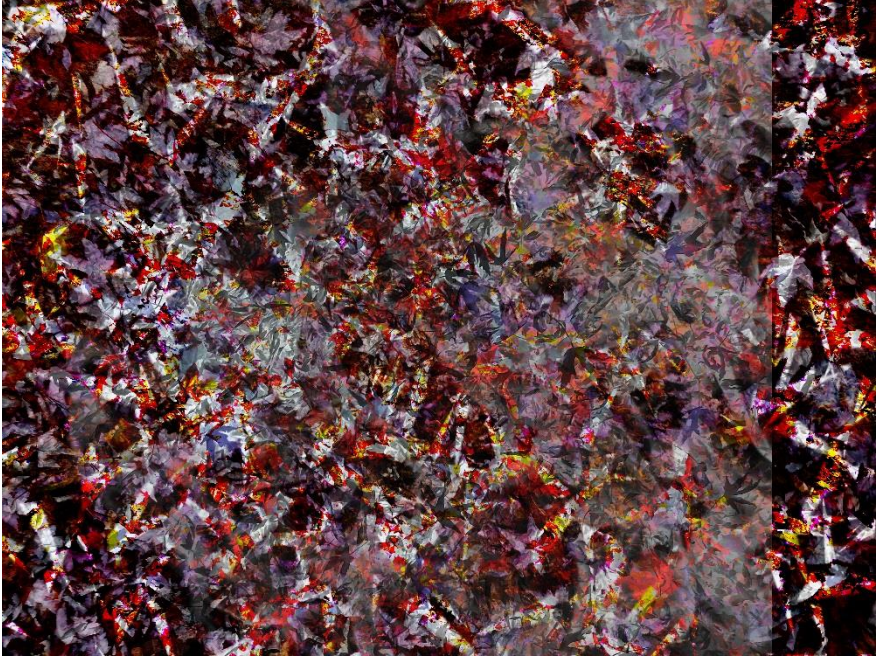
new reality or environment.

Music creates a sense of a different reality that we tend to escape to when we have troubles dealing with problems or we want to stimulate our brain.





Is virtual reality something we believe is an environment that we are able to relax in from current realities, or is it just an imaginary world?



It is a blend of multiple realities making it a world of realities that become virtuality and you are discovering why they have showed up. Is it that your mind is becoming fragmented and you cannot determine which reality is what or which is the real one? These are different memories of personalities coming to the surface. *What is it about this image that has got me fixed on it?* With this last image, something unexpected occurred inside of the image. It reminds me of “Where’s Waldo?” books, because upon analyzing it, half of a man’s face was seen. Can you see it?

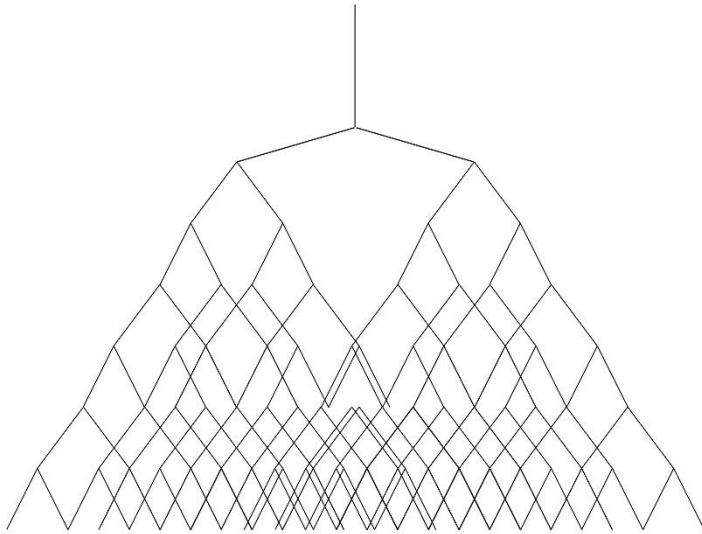
# MIX OF EIDETIC AND VIRTUAL

Is the difference between virtual reality and virtuality the belief that in virtual reality there is no consequence to your actions? These questions are here as a guide on my quest to discover what virtual reality is? However, now it is not called Virtual Reality but really Virtuality, “Tony Martinico”

The quest to begin or continue in the discovery of what virtual reality and virtuality is? Writing down everything that comes into my head keeps me on track and also work out problems or solutions. There have been phases where I would question if this is the right direction? I start to question everything I that I have been doing for the past year, like programming the PS Move with the Oculus Rift using Java programming language. In doing so, allowed me to able to learn more about myself and the problem I struggle with and the more I want to solve.

The problem that I struggle to understand is, what is virtual reality and what is virtuality? Taking the two words virtual reality and separate them to understand that it is more than just two words that make up some other device that everyone tends to think about. I'm talking about what is virtual reality and what is reality? By figuring out these questions, will help me to make better design decisions.

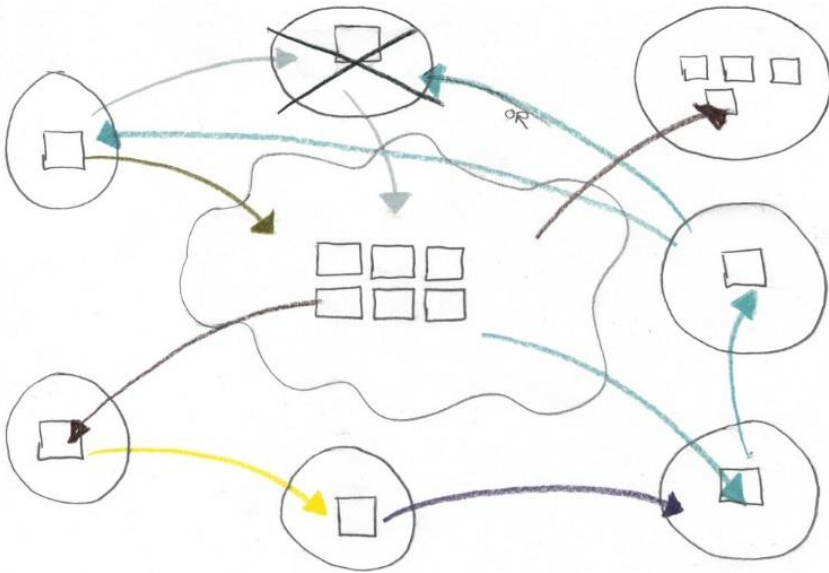
Now after learning new terms, it is not the virtual reality that is to be discovered; it is the virtuality. But with the use of virtuality we can also uncover virtual reality. Our imagination or abstract thoughts can become a tool for limitless possibilities. There possibilities that exist that are unfamiliar to us because we don't look outside the box for them.



This relates to a branch tree, where you have a decision to make and that decision can have two outcomes. But these outcomes can also loop back to the same decision where you can choose a different outcome. By understanding the virtuality world, can help us to see new possibilities that will affect how we make design decisions.

This image is similar to a decision branch tree but it is focused on how networks of data can be moved around. By sketching out these problems, I am able to visually see that is happening. The sketch is the start of how I think a network works, it selects connections are removed. This though occurred before the Networking class at University of Detroit Mercy started.





Each colored line is a representation of a connection in a network that is linked to different routers that are connected to computers and each router is connected to other routers. If a connection is severed from one router, data can still move around to that computer but in a different route. This idea leads into the start of virtuality by thinking of different possibilities that data can be routed.

# VIRTUAL

When you think about the virtual, what comes to mind? Do you think about technology Virtual Reality (VR) or do you think about the imaginary? Well whatever your answer is, it is correct. Over the course of the year, the word virtual and virtual reality kept battling each other in my head with questions that will be throughout the course of this section.

Is virtual reality just a term that is used for marketing? No, it is not, it is a term that is used to describe more than one purpose. One of the purpose is to understand space and how we interact in side of it. By not be restricted to boundaries by using the environment to our advantage to uncover layers of possibilities that are contained within. It's the layering that makes things become virtual.

Virtual is more than just another screen that plays tricks on out brain. It is taking the abstract or imaginary and making it have possibilities for it to be concrete. In essence, virtuality allows us to think more openly.

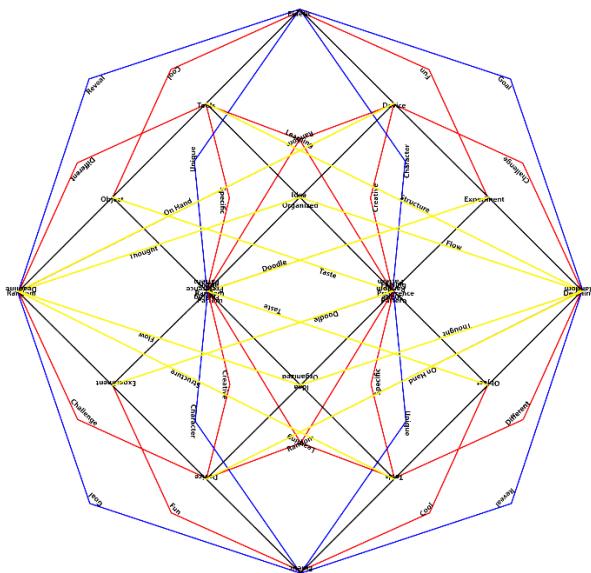
Can the abstract in fact but real? Yes, it can. However, it is difficult to prove because everything we know would be different. An example is when an ignorant person was pulled off to the side from everything they know and was told and proved that outside from everything you know is different. That person was then brought back in; they would have a hard time fitting back in because they knew the truth and everything that other people believe is a lie.

Understand that there is more to this world than just you. Throughout this discovery, there have been phases what I would question myself in the actions that I am taking. These questions

are important to help me discover things about the tools I am using.

Virtuality is used with eidetics to help recognize colors, shapes, patterns, rhythms, and ideas that force us to think in new ways that were never possible. It allows us to take familiar things and break them down into pieces and then take the pieces and put them back together into something new.

Virtual reality or VR is more than just a word to specify a device. It is a tool that can help us to understand how things work in this world. “Eidetic is a vivid image or memory, Tony Martinico”. Eidetic can be used to help me explore virtual reality. By focusing on eidetic as a structure of layers of information and peeling the layers off; it will help me to understand the meaning behind virtuality.



Virtual reality is another world outside ours that allow us the set the rules and how we live. It is also used to grab people’s attention and suck them in to something new but virtual reality has been around for quite some time. Technology is sometimes changing us to think outside the box and sometimes technology is used as a



money scheme to force people into getting that object because it is the new thing. That new thing will take our minds off the big picture and think narrow minded.

Technology is always changing and will keep on continuing to evolve because of the ideas of other people influencing others. Virtual reality is something that people struggle to understand because we have a fixed idea of what the two words mean. Instead they are fixed upon a device that allows the user to be more mobile while wearing it. I am talking about Head Mounted Displays or HMD for short.

This is a device that attaches to the users' head and the motion that the user creates is then translated to the HMD. We have seen prototypes of virtual reality, for example the View Master was a

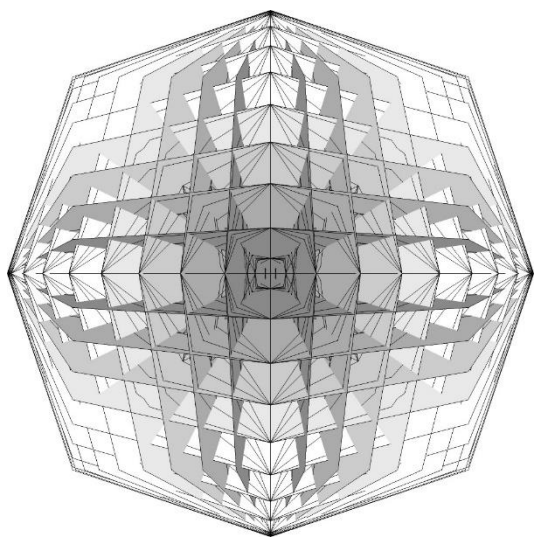


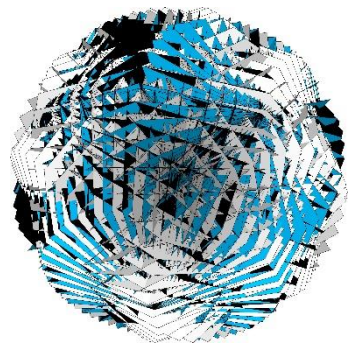
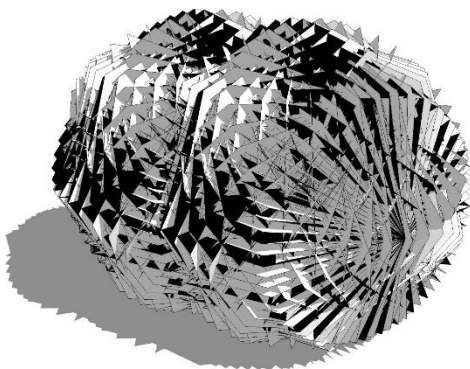
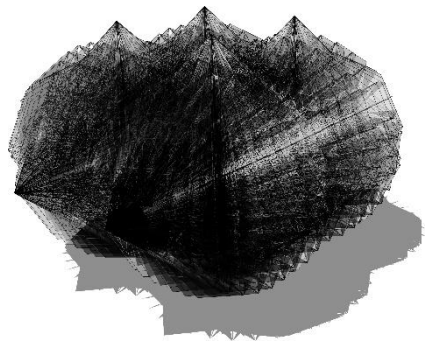
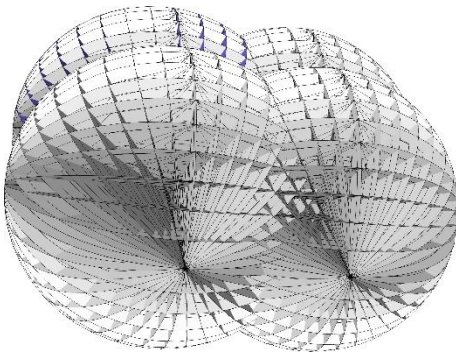
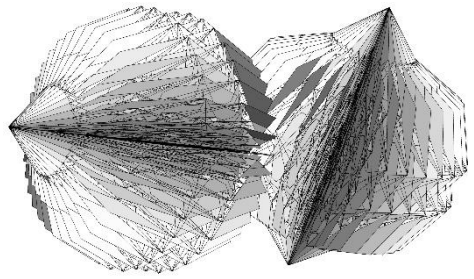
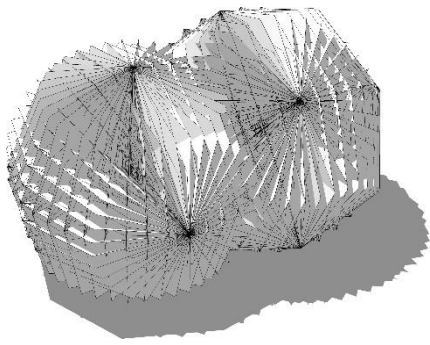
virtual reality device. Over time the size of the device has changed but the effect and use of it has remained the same. That technology has changed over time but the effect and use of it has remained the same.

Along the path of discovering what virtual reality is, there were little hiccups along the way. My brain was having difficulty understanding the task of discovering. The problems ranged from my personal feelings for creating the program, to thinking about how we can use in architectural practice. The personal feelings were that, we work with 3D software to design architecture and present the 3D design as 2D. What is the point of designing in 3D, if we are just going to view in it in 2D? My thinking for this is, because, when I design, I was using a keyboard and mouse and after a while my body starts to get tight from looking down and just moving my wrists. Therefore, I want to design and experience it physically and virtually in space; where I can design using my body to fully engage in the design of architecture that will allow for a lot more possibilities to occur.

After reading Nick Sousanis, *Unflattening*, the goal for how we understand the virtual is to break the norm of what you think and do and change it to something different.

I am going to refer to the eidetic as words, this time, that will help to understand the discovery of Virtuality by using your imagination to think about multiple outcomes from a scenario that you come across. The outcomes are possible and that they become real on levels of the virtual. You begin to think about the “What If” as it becomes actual where the imaginary starts to become a network of possibilities that become entangles in the intricate expanding realm of information. What would the network look like if it would loop on itself? Would the network look like words that are overlaid with each other that creates a sphere of networks?







The eidetic tools contain a select network that there are networks within networks.

I am currently lost in what might seem like an easy task but after the installation, I have no idea what direction I am going in. I was exploring possible networks using string to visually represent the network that contains multiple forces. Which there are multiple forces acting on the network. At some time, I was uncovering the layers that make up the network in the hope to learn about certain decisions that play a factor in the network and maybe something else.



After discussion with Becky Nix, about the different forces on a network and the frame of the network, I had to go back to the example of the observer. If Observer A needs to find something Observer A has to traverse through the network to find what they are looking for. But the first time the Observer A goes through the network, they have no idea how to find the information unless they start to think of what the information is not. The Observer B would be able to make a better decision than Observer A because the Observer B would have less to think about.

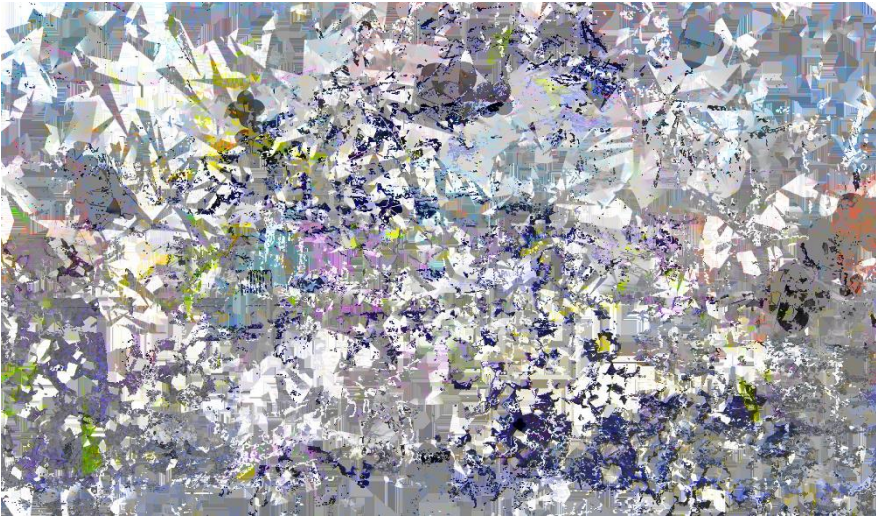


This network consists of ideas and thoughts, which is a collection of informative that can be organized into a more clear information based off of how you traverse through the network.

The point of this network is to understand Virtuality since virtuality deals with what something could be (Actual or real and Abstract or imaginary), “Tony Martinico”. The network is a grouping of possibilities that represent what something could be in virtuality. The eidetic tools that have been created are just scratching the surface of what the possibilities could be.

Kurt Hilton told me a word when I was in the hallway creating the small string network and referred to it as a “Mind Map”, this mind map is a network of ideas that relate to what things could be as they answer a certain problem. This mind map is just a fragment in the network that I the observer is trying to understand what is outside the network. Obviously when you are outside the network you are not a part of the network but an isolation.

An isolation is being separated from any outside force that can help guide one to understand possibilities. These networks are uncorrupted data that contain possibilities and however there is a layer of corruption that we cannot see it but we know it is there because above any uncorrupted data there is corrupt data. Just like this eidetic that was created today. This is what the observer sees as the observer is watching the observed.



Other thoughts, how can I create this corruption? Now that I just discovered this corruption (if I am going with that word) What is the next step of this path and what is the corruption made of? Is it usable to the observer? How does it relate to Virtuality? Is this corruption beyond what the observer sees as static and dynamic? As these question become the formula for hyperdynamic environment.





At the end of the Fall 2016 semester, I talked to Tony Martinico about what I presented at that benchmark 2. He was explaining to me that it might not be Virtual Reality that I was trying to discover but more of Virtuality.

As now, I start breaking down the actions that I have taken to understand the logic behind it.

What was the point of breaking the eidetic into words?

The point was to break down the tool that is the eidetic into more tools that can be used as other tools. These eidetics contain cryptic information and I was trying to reveal the cryptic information by using words to describe the process that went into making it. This ties into the discovery of Hyperdynamic using virtuality.

How were these images made?  
Was there a goal?  
What was the purpose of them?  
What did you learn from them?  
Does virtual mean another world or another place?  
Are you isolated from the world when you enter the other world?  
Do they coexist with each other?

Is virtual reality the invisible world and reality is the visible?  
How can we peruse this invisible world? Or is virtual the imaginary?

Can reality have limitless possibilities where things that we imagine don't exist and things we don't imagine exist?

Am I going in the right direction?  
What is the right direction?  
Is virtual reality just an extension of reality? I believe it would change our perspective of how we design. How?...

What is reality?  
Are we forced to see things as view within a frame or is there more past the frame?

As I try to answer these questions, I stop and think how I view the world as I relabel the tools as static and dynamic environments.

After determining which ones were static and dynamic an idea or thought occurred.

Is there a something beyond what we see things as static and dynamic?

"Yes, there is static followed by dynamic followed by Hyperdynamic. It was hard to describe the meaning because there was no meaning for hyperdynamic, "Michael Schroeder"

So, I came up with a definition for how I describe the word. This leads you to go to the Hyperdynamic section or continue to the looping section.



As this process is a loop that keeps looping back to other ideas that eventually the questions will be answered. I am not sure If I have answered the following question because involve a lengthy process that will continue.



# LOOPING

With the belief that these eidetics have a deeper meaning behind them where I attempted to relate them to a network of computers that transmit data to each other. At the time, I was taking a Networking class and I wanted to link the networking class with my thesis work. The following is what was explained to Professor Gregory Laidlaw.

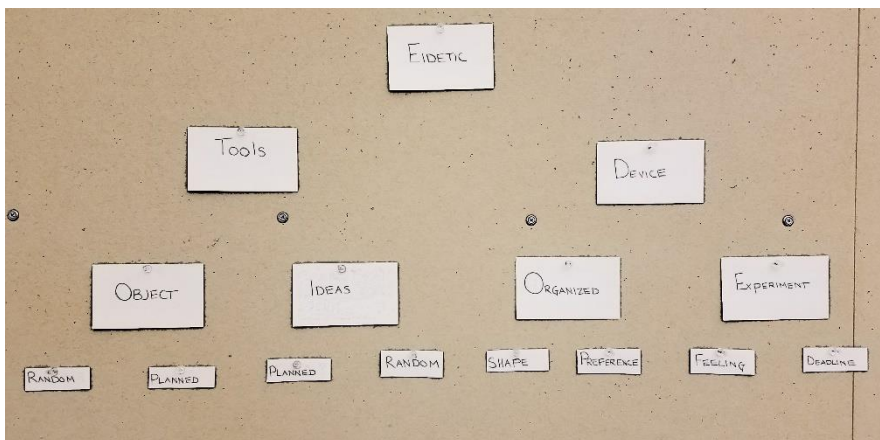
*"I am thinking of a branch tree that has loops interweave in it, which shatters the hierarchy and makes it more of a looping tree. I was trying to think how I am going to create this in programming and in architecture. What came to mind was a password cracking program where things would loop back to the beginning and continues through the process again until it finds the correct character. The process becomes repetitive until you determine the password but there is no beginning to the process of how it starts so it is hard to create this because it becomes an infinite loop."*

After talking with Professor Gregory Laidlaw, he told me about the "Choose Your Own Adventure books". "These books allow you to choose your adventure as you read by, jumping to different pages based on which path you chose, Gregory Laidlaw."

An idea occurred to me that I would make this network a choose your own adventure. Computer networks don't really follow that same logic. They follow the easiest path to make things easier for the user. But it was a lot easier saying this idea than putting into action.

So, this network evolved into a branch tree diagram, however there was only one problem. How can this branch tree diagram contain possibilities? Professor Gregory Laidlaw, showed me a site called *Binary Tree* by Nick Parlante, that describes binary trees and how it works.

For a probability branch tree to work you need to have a hierarchy of things that represent dominance. However, I think the probability branch tree diagram can turn into something different. I break down the eidetic that I created over the semesters to understand how they were created using the branch tree. The branch tree is not really a branch tree because things loop back to each other creating a looping branch, “Nick Parlante”

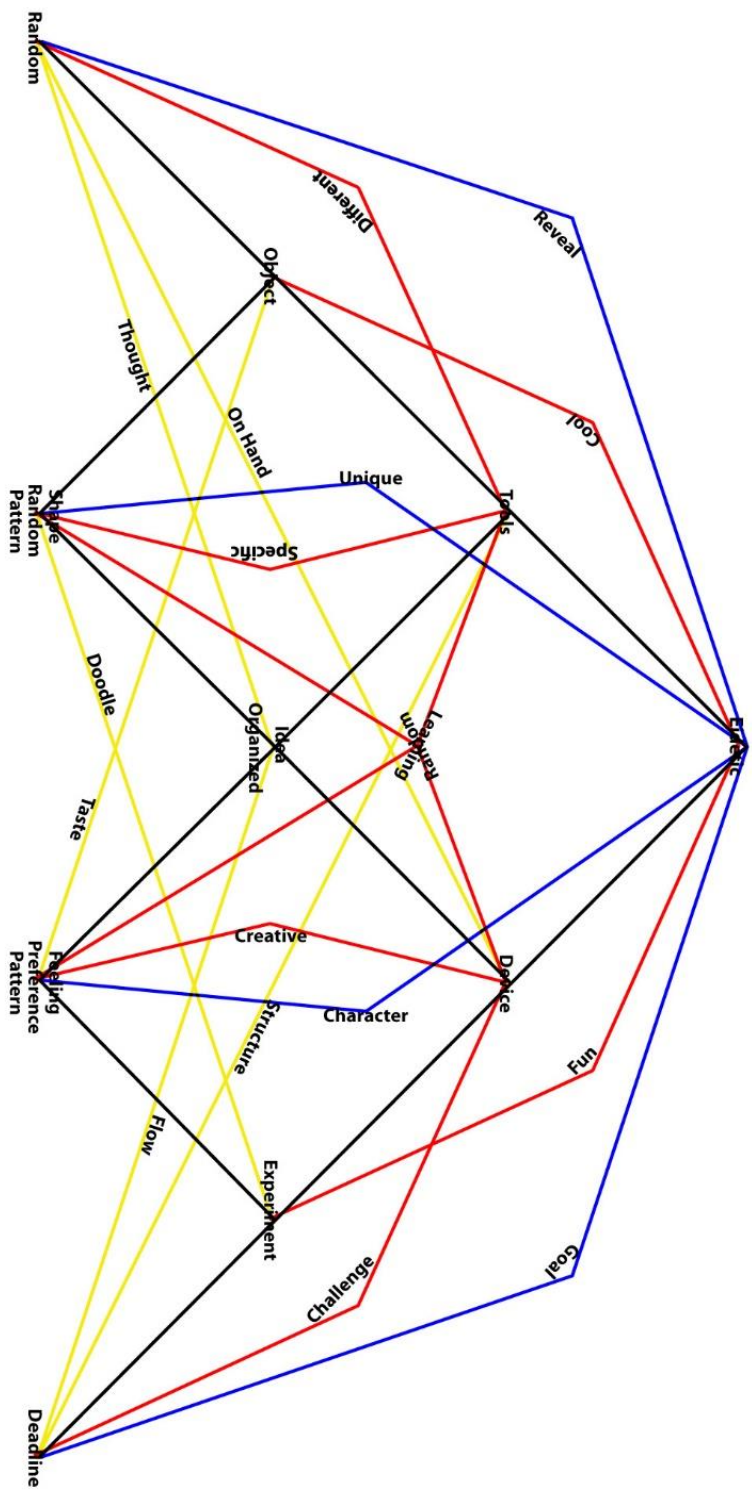


I started with the word eidetic and broke it down into two sections that represented eidetic. The first branch is Tools that were used to create the eidetic and then classified the tools into Objects that are shapes and Ideas that are ways of creating the shapes. These were then broken down into further specific meaning where the Objects were created at Random and were Planned. The Ideas were broken down into Planned ideas and Random ideas. The second branch from eidetic was Device that was the keyboard and tablet, which was then broken down into Organized; that was ways

of thinking and Experiment that classified as fun ways of thinking. The Organized devices were refined into Shapes and Preference. The Experiment was broken into Feelings and Deadline.

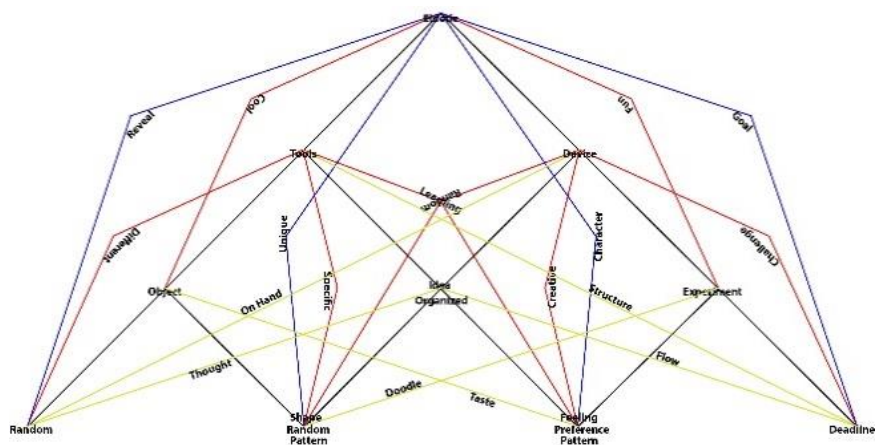
At the same time of the experiment above I create a shape or pattern that was represented as lines instead of words to see how things would relate. I took the branch shape and created an eidetic to represent how one shape can be used repeatedly. This was to show how things can have a flow of repeated patterns or a logical sequence.



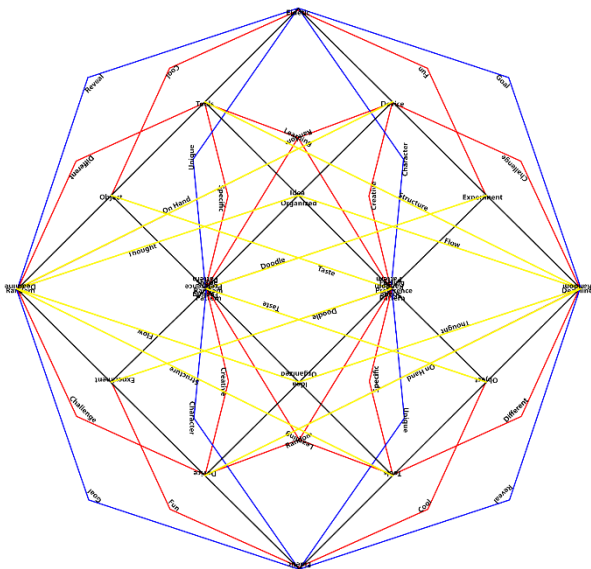




These branches when overlaid with each other create a never-ending loop. Branch 1 is the start of the branch. As you start to overlay each branch lines, words start to connect with each other. Each word that is next to a line represents more specific information about the original eidetic and how it was created. As this begins to use words as a tool to open limitless possibilities. In the end after layering them all together, you get this.



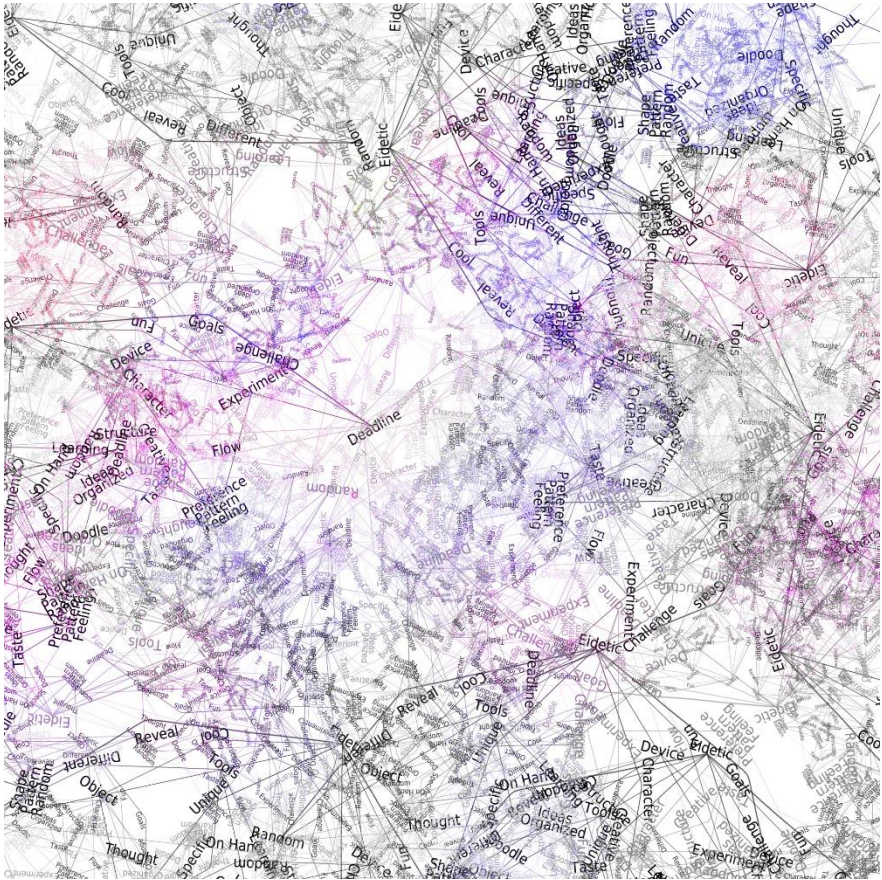
Seeing this together brought up the idea again of things looping on itself.



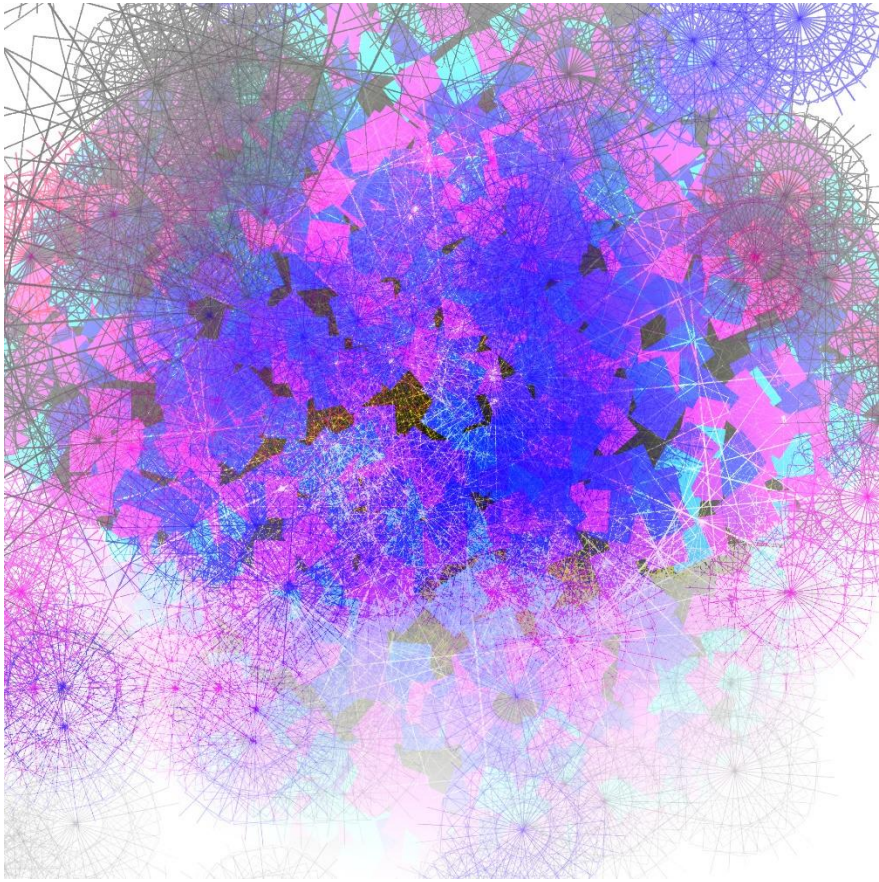
This data is embedded in a vast unorganized structure which is very hard to understand but with the use of the tool this unorganized structure starts to take shape.





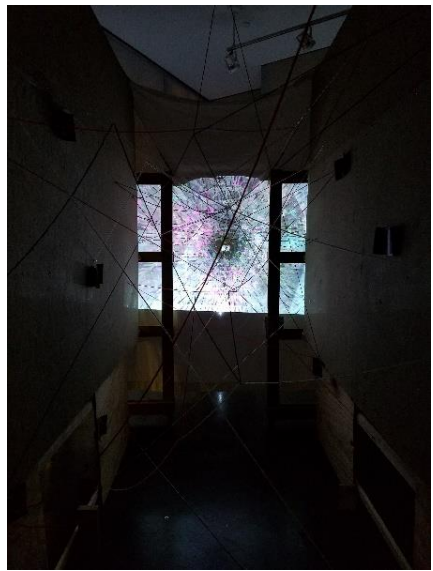


Using words and shapes to redefine what I see as familiar to become unfamiliar.



The eidetic that was created from the single shape consists of multiple layers that make it a network. This tool is used to represent multiple layers of networks within a network. Could a network have a virtual network within itself? To answer the question, I created an experiment.





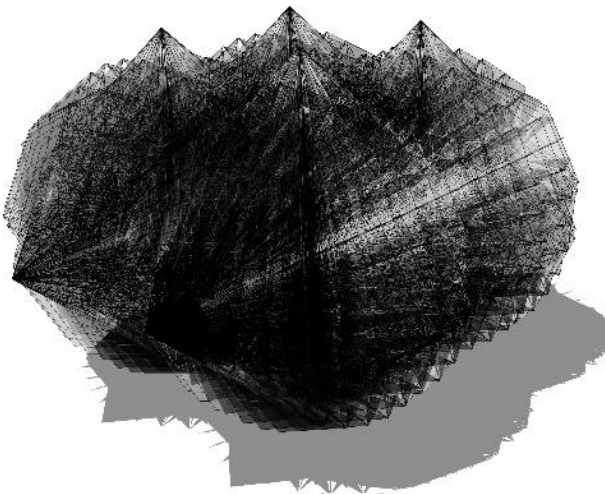
An experiment was created with string to use a tool that was familiar to me and turn it into something unfamiliar. This experiment used different color string to represent what I thought would be a network, that it would have different paths to take as you traverse through this experiment.

Reflecting on the experiment that was using string, I learned that as you traverse through a network in order to learn that a network contains many dynamic forces. These many forces pull our decisions in different directions, and this experiment is just a small section of the forces within this network.

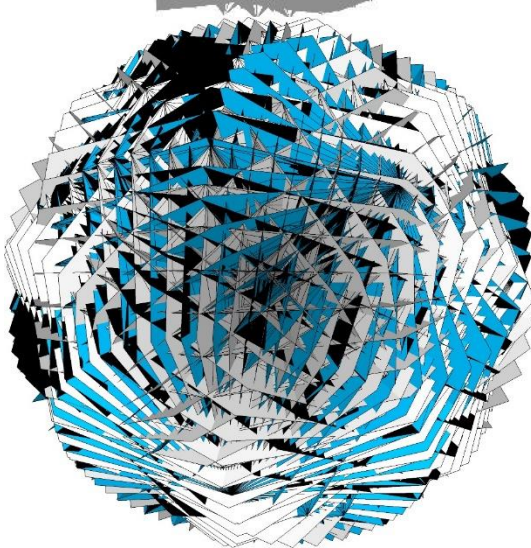
I define network is a grouping of things that come together to share information with each other that can help understand things better. "A network is an interconnected or interrelated chain, group or system, "Network definition". This network can contain several information that is used to help others understand how to think differently because network in a way, is a virtuality system. Unless we actually see the connections. The system allows you to be able to think differently based on the information that is presented.

Seeing it and thinking are two things you don't need to have to understand a network. By seeing the connections that the network creates, allows you to physically see and understand what the connections are and what they consist of. By thinking about the connection, you are able to imagine how things could be looped.

Taking this notion of how to see things other than what they are was hard, a few models were created to help represent how another way looping would look like in a network. The models were



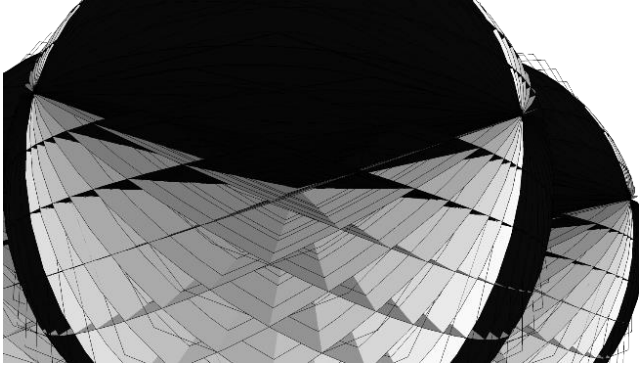
also used in conjunction with virtuality because of the complexity of the design. Since we can not see the other side of the model, we can only think of the possibilities that lay on the other side.



Inspired by the book *Unflattening* by Nick Sousanis, I attempted to unflatten a flattened network." The unflattened network became the hyperdynamic environment

through searching and breaking the familiar down and piecing it back

together again. I tried experiments with words as tools and without words as tools, in the search to unflatten the network.



You may choose to end here or loop back up to another section. As my search continues to keep uncovering networks of information as looping identities of the virtual. In the hope, to be able to see the hyperdynamic environment come to live as we continue to design. Looping can be used in many ways to break down things we are familiar with into unfamiliar things. My search to understand the possibilities that come from looping is difficult if, I continue to keep looking for the answer and not looking outside the box.



# PROGRAMMING LOGS

*The following section is the log that shows amount of hours worked on programming the PS Move with the computer and another programs also and a brief description what the work that was done. I am not doing to explain the log but this just documenting the work that was done only in the hope someone who looks at this and will be able to continue from the progress.*

5-7-16

Worked for 4 hours on being able to place objects on the canvas in StdDraw3D.java lines 1450 to 1471.

5-9-16

Worked for 5 hours and figured out how to place spheres at different Z coordinate by using the move to be able to change it. I used the MoveFramework to display data that I would be able to use for the Z coordinate.

5-12-16

Worked for 3 hours trying to get java to work in visual studios. But I figured it would be best to use eclipse. Found a website that allows me to use java in Visual studio.

6-5-16

Worked for 4 hours and 15 minutes. Trying to learn use C++ code in java. May switch from java to C++ language for easiness. But I would still struggle because I don't know much about C++.

6-18-16

3 hours tries to set up OpenCV because after doing some research I discovered that I need this in order to get the PS Move files to work.

6-20-16

Worked for 3 hours.

6-22-16

Worked for 3 hours.

7-13-16

Worked for 5 hours. I was able to successfully pair the PS Move with the computer.

7-21-16

Worked for 6 hours. Worked on trying to get the move to work with java by using the PS Move files from github.

7-22-16

Worked for 6 hours. Installed SWIG and was able to get more progress with java because I was able to get more files available.

7-23-16

Worked for 6 hours. Worked on trying to get the move to work with java by using the PS Move files from github.

7-24-16

Worked for 5 hours. Trying to re-get the api using cboulay/psmoveapi.git after following the instructions the folder io\thp\psmove was created but was empty. Not sure why but I copied the java files into the /folder.

8-1-16

Worked for 5 hours trying to get SWIG to work to link java and C++. SWIG is supposed to create a wrapper so I can use c++ and call java inside of it and also the other way around.

8-3-16

Worked for 5 hours. Same thing with SWIG.

8-5-16

Worked for 4 hours. Trying the same thing as the other day. Also talked to Jordan about the project and he had some ideas and maybe an uncle with connections.

8-6-16

Worked for 6 hours. Same thing but moved closer and now know exactly what needs to be done. I need to take the variables from C++ and implement them in java. Jordan called about Lowe's Holeroom.

8-7-16

Worked for 6 hours. Added java\_include/bin to system environment. Was able to move along with one of the library api would have to check date.

8-9-16

Worked for 45 minutes. Going to focus on getting the API to work.

8-11-16

Worked for 2 hours. It might be best to have all three data variables constantly being called from C++ to java in order to be able to move around and be able to place objects. I was trying to call the x, y and z from the MoveFramework by using another method so it can be called every time the update method runs but I was not getting any where.

8-15-16

Worked for 3 hours. I did some research to find a program that can decompile a .dll file for I can see what classes or methods are used.

9-2-16

Worked for 3 hours. Did work before studio and was almost able to get the PSMoveapi to somewhat compile. But it kept giving me errors.

9-5-16

Worked for 3 hours. Was able to successfully create psmoveapi.dll file along with the .jar file by messing with the psmoveapi.jar visual studio file by switching the / to \ in the path and change LS to copy.

9-6-16

Worked for 2 hours. Going to create a blank java file to see if I can access the api to use in the virtual environment. When I run the tracker I get an error.

9-7-16



Worked for 4 hours. Tried to figure out why I was getting an error. I looked at some site but no luck.

9-8-16

Worked for 2 hours. Tried different methods to solve the problem but also seeing if I can call things.

9-9-16

Worked for 2 hours before studio and 5 hours during studio. Explored the option of trying to recompile everything again to get rid of the message. Explored using the PS Move Service.

9-17 - 19 -16

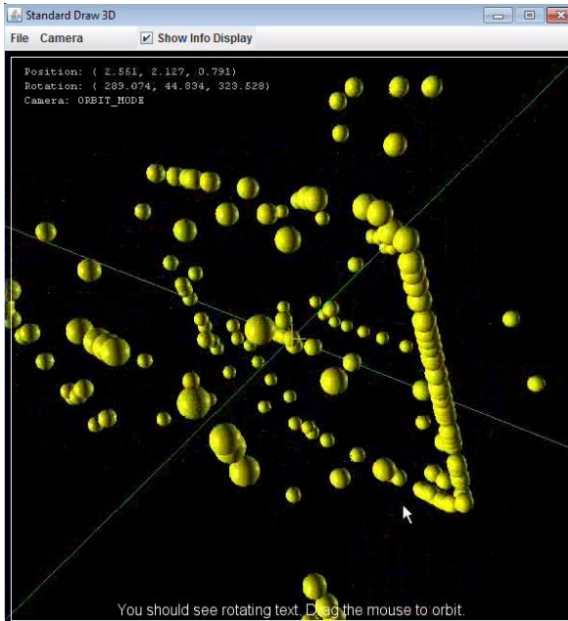
Worked for 10 hours. Chose a different route for now because the move was giving me problems. After researching how to get the move to work I stumbled upon something called Jinput. I looked into Jinput to access a game controller with java. No luck.

9-20-16

Worked for 5 hours. Found that LWJGL works with exactly what I need. Watched a video for how to set it up in eclipse. Tried but ran into problems but even got it to work.

9-21-16

Worked for 4 hours. Now going to try to merge it (LWJGL) with StdDraw3D.java. I was able to use the ps3 controller to place spheres at different locations in space in StdDraw3D. Now I need to refine it so I don't need to use L2/R2 buttons for depth. I had an idea for running MoveFramework and view the game controller to determine if I can get the axis information to implement them into StdDraw/ Tried it out but it did not work. But when I have the Move connected it displays select button number when pressed.



9-23-16

Worked for 2 hours before and during studio for 7 hours total. I might need to read the java3D book to determine how to set up the environment so when I zoom I move and draw. Trial run after everything is set up where I create 4 points to create a square or set up a grid system for placing shapes on the grid to start experimenting with create an environment.

9-28-16

Worked for 3 hours. I am at a standstill during studio 3ish hours before I was getting the joystick to move like it does on minecraft but during this I was thinking what happens next when I complete it. I am trying to experience drawing in 3D space.

10-12-16

Worked for 5 hours. JNI and JNA. JNI binding must have both java portion and C portion to run. JNA requires you to declare functions with methods signature to match those in the library. Oculus Rift In Action p.264 JOVR was written by the authors to allow any java application to integrate with the SDK and support the Rift. I will be using the Rift api with LWJGL. Pages 262-286

10-16-16

Worked for 4 hours. Working on getting Rift to work with my program and with java. I was getting unsatisfiedLinkError using eclipse solved it by adding the Native folder from file transfer into the JRE section. Ran it and it worked. It displayed a Oculus screen so I am on the right track. Its 11:45 am so now I need to see how I can get the java3D to work with the Right. Can't find what I need but I need to have lwjgl look for the Rift and connect to it. Then I need to use the view platform or something to get the scene to be displayed in the Rift. Taking break at 12:30pm

10-17-16

Worked for 5 hours. Worked on understanding JOVR to include it with java3D.

10-19-16

Worked for 5 hours. I have found the few pages I need to understand how I can get the oculus to work in my program instead of the other way around. The pages are 276 located in a folder called JAVA 3D. At this point I can either learn it now or when I build my desktop. I need to get the device and tracker the I need to create a view to display it in the oculus. The problem is understanding how the view is created and also how it works.

11-11-16

Worked for 5 hours. I was able to successfully get the Oculus to work with java. (It was more like communicate with java) and when testing it I was able to view a glimpse of a predefine space that either java or the oculus created. But because I was able to get it to work I need to get the StdDraw3D to work with the Oculus. Spent 5 hours today getting it to work. Before today I was extremely close to it but I was told and I noticed that I was lagging behind on my physical progress (on my thesis because I did not have any physical things to show) and was told to put down the coding and work on the other stuff. When I picked it back up I had so much trouble because where I last left off I didn't document it. But I used JRIft to access the Oculus. Got it to work at 9:08pm.



# ADDITIONAL MATERIAL

Attempt 1 Video

<https://youtu.be/MKx14ILEQu0>

Attempt 2 Video

<https://youtu.be/wUNOGII05fI>

Attempt 3 Video

<https://youtu.be/iCfHrLJweEk>

Attempt 4 Video

[https://youtu.be/KJ7m9WJQh\\_M](https://youtu.be/KJ7m9WJQh_M)

Attempt 5 Video

<https://youtu.be/SJaKGQjTQp8>

Traversing the Network 1

<https://youtu.be/Q2Bjyz-l86g>

Traversing the Network 2

<https://youtu.be/QGmqHWVA9Q4>



# BIBLIOGRAPHY

- 38leinaD. "38leinaD/JRift." *GitHub*. N.p., 14 Apr. 2014. Web. 12 Oct. 2016. <<https://github.com/38leinaD/JRift>>.
- Anonymous, Near, Assin Dok, Resident Kyantol, and Aliquam CUPITOR. "Anonymous." */tg/ - Traditional Games*. N.p., n.d. Web. 24 Apr. 2017.
- Blascovich, Jim and Jeremy Bailenson. *Infinite Reality: The Hidden Blueprint of Our Virtual Lives*. New York: William Morrow, 2012. Print.
- Bimber, Oliver, and Ramesh Raskar. *Spatial Augmented Reality: Merging Real and Virtual Worlds*. Wellesley, MA: K Peters, 2005. Print.
- Condax, Phil. *Stereoscope*. N.p., 7 Aug. 2000. Web. 29 Apr. 2017. <<http://courses.ncssm.edu/gallery/collections/toys/html/exhibit01.htm>>.
- Davis, Bradley Austin, Philip Rosedale, Karen Bryla, and Phillips Alexander Benton. *Oculus Rift in Action*. Shelter Island, NY: Manning Publications, 2015. Print.
- "Device." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017.
- "Dynamic." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017.
- Fowler, O Noble M.D. (2). "Hyperdynamic States." *Springer*. Springer New York, 01 Jan. 1991. Web. 25 Apr. 2017. <[http://link.springer.com/chapter/10.1007/978-1-4612-3068-7\\_28](http://link.springer.com/chapter/10.1007/978-1-4612-3068-7_28)>.

"Google Code Archive - Long-term Storage for Google Code Project Hosting." Google. Google, 15 Dec. 2011. Web. 24 Apr. 2017.

<<https://code.google.com/archive/p/moveframework/>>.

"Google Code Archive - Long-term Storage for Google Code Project Hosting." Google. Google, n.d. Web. 24 Apr. 2017.

<<https://code.google.com/archive/p/moveonpc/>>.

Hatledal, Lars Ivar. "JOVR – Java Bindings for Oculus Rift SDK 0.4.2.0." *Laht's Blog*. N.p., 06 Sept. 2014. Web. 05 May. 2016. <<http://laht.info/jovr-java-bindings-for-oculus-rift-sdk-0-4-0/>>.

"HID API for Linux, Mac OS X, and Windows." *HID API for Linux, Mac OS X, and Windows*. Signal 11 Software, LLC., 09 Oct. 2010. Web. 23 Aug. 2015.

<<http://www.signal11.us/oss/hidapi/>>.

"History Of Virtual Reality." *Virtual Reality*. Virtual Reality Society, 10 Jan. 2016. Web. 24 Nov. 2016.

<<https://www.vrs.org.uk/virtual-reality/history.html>>.

"Hyperdynamic Medical Definition." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017. <<https://www.merriam-webster.com/medical/hyperdynamic>>.

Jerald, Jason. *The VR Book: Human-Centered for Virtual Reality*. New York, Morgan & Claypool, 2015. Print.

"Network." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017.

Parlante, Nick. *Binary Trees*. N.p., n.d. Web. 23 Jan. 2017.



"PS Move API." *PS Move API (thp.io)*. Thomas Perl, 08 Jan. 2016. Web. 27 Apr. 2017.

Rheingold, Howard. *Virtual Reality: The Revolutionary Technology of Computer-Generated Artificial Worlds – and How It Promises to Transform Society*. New York: Simon & Schuster, 1992. Print.

Rosado, Osvaldo. "PlayStation Move as PC Pointing Device." *Osvaldo Rosado - PlayStation Move as PC Pointing Device*. Osvaldo Rosado, 18 Apr. 2011. Web. 15 May. 2016. <<http://osvaldojr.com/article/moveforpc>>.

"Static." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017.

Schmolstieg, D and Hollerer, T. *Augmented Reality: Principles and Practice*. Retrieved July 5, 2016.

Sousanis, Nick. *Unflattening*. Cambridge, MA: Harvard UP, 2015. Print.

"StdDraw." *Princeton University*. The Trustees of Princeton University, n.d. Web. 02 Apr. 2016. <<http://introcs.cs.princeton.edu/java/stdlib/javadoc/StdDraw.html>>.

Thibeault, Jason. "Getting a PS3 Controller to Work with Windows and Linux: Compare/contrast." *Lousy Canuck*. N.p., 05 June 2012. Web. 18 Aug. 2016. <<https://the-orbit.net/lousycanuck/2012/06/05/getting-a-ps3-controller-to-work-with-windows-and-linux-comparecontrast/>>.

- Thp. "Thp/psmoveapi." *GitHub*. N.p., 21 Feb. 2017. Web. 10 Feb. 2016. <<https://github.com/thp/psmoveapi>>.
- Tomsho, Greg. *Guide to Networking Essentials*. Seventh ed. Boston, MA: Cengage Learning, 2016. Print.
- "Tool." *Merriam-Webster*. Merriam-Webster, n.d. Web. 29 Apr. 2017.
- Yee, Nick. *The Proteus Paradox: How Online Games and Virtual Worlds Change Us – And How They Don't*. Yale UP. 2014. Print.

